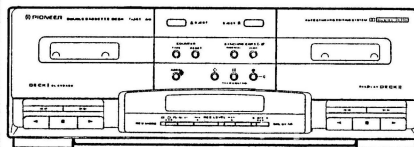


Service Manual



ORDER NO.
ARP2640

STEREO DOUBLE CASSETTE TAPE DECK

CT-J410WR

CT-J310WR

CT-J410WR AND CT-J310WR HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	CT-J410WR	CT-J310WR		
AEM	○	○	AC power supplied from power transformer's secondary of other system component	
AB	○	○		
ADL	○	○		

- This manual is applicable to the following: CT-J410WR/AEM, AB and ADL; CT-J310WR/AEM, AB and ADL.
- These products are systems components.
Each of these products does not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.
These products' instructions are contained within the instruction manual of the related system component(s).
The manual is packed with those component(s).
These products' accessories etc. are packed with their related component(s).

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1. EXPLODED VIEWS AND PARTS LIST

1.1 EXTERIOR

NOTES:

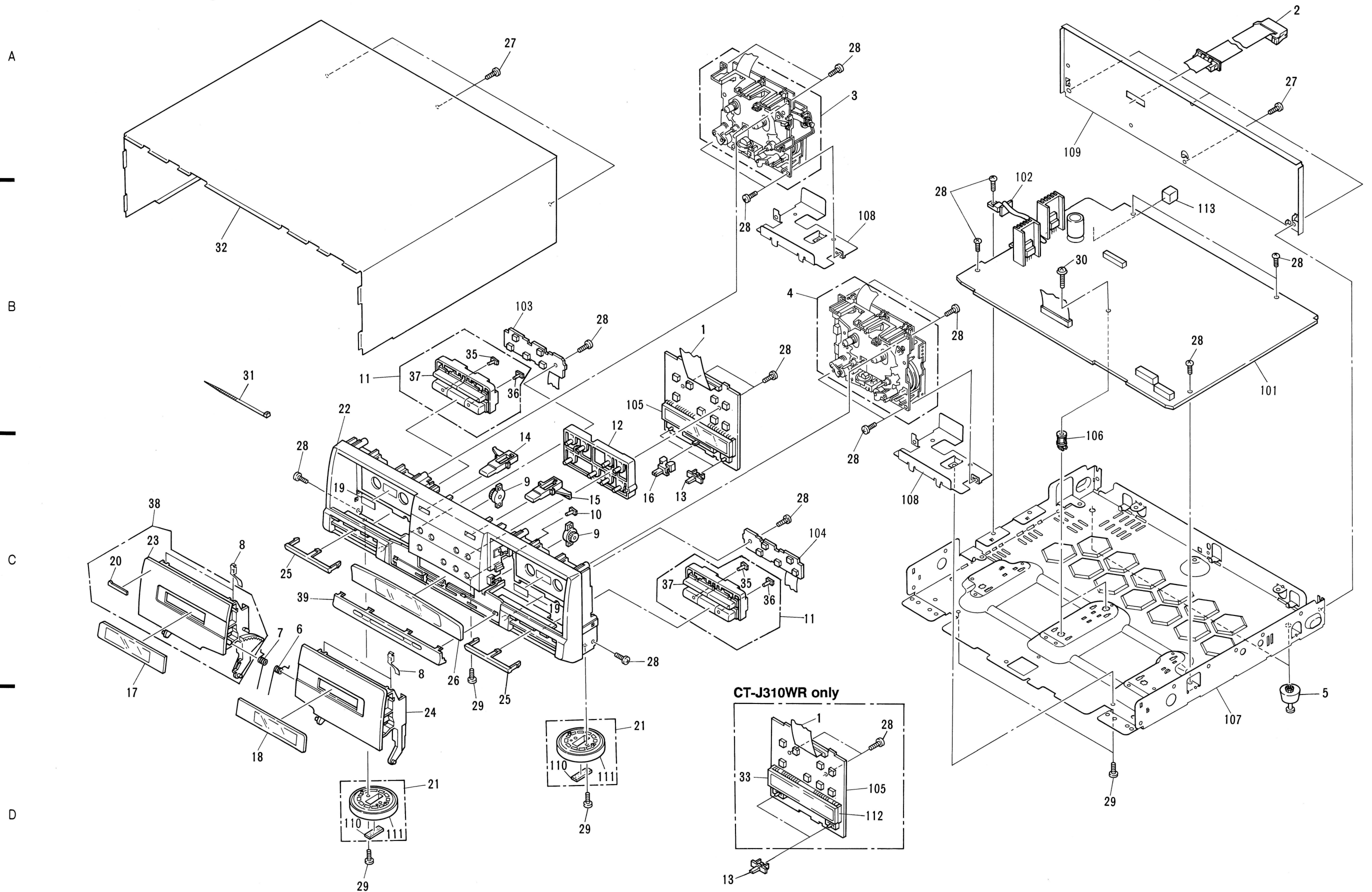
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “ \odot ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Lead card (30P) (CT-J410WR)	RDD1261		31	Cord clamper	REC - 371
		Lead card (28P) (CT-J310WR)	RDD1263		32	Bonnet assembly	REA1031
	2	Connector assembly (15P)	RKP1358		33	LED lens (CT-J310WR)	RAH2015
\odot	3	Mechanism unit 1	RYM1191		34	
\odot	4	Mechanism unit 2 (CT-J410WR)	RYM1192	NSP	35	Indicator lens A (CT-J410WR)	RNK1850
\odot		Mechanism unit 2 (CT-J310WR)	RYM1193	NSP		Indicator lens A (CT-J310WR)	RNK1888
	5	Leg assembly (S)	AMR1937	NSP	36	Indicator lens B (CT-J410WR)	RNK1851
	6	Door spring R	RBH1329	NSP		Indicator lens B (CT-J310WR)	RNK1889
	7	Door spring L	RBH1328		37	Operation knob	RAC1766
	8	Half pressure spring	RBK1004		38	Door L Ass'y (CT-J410WR)	REA1052
	9	Damper assembly	VXA1153			Door L Ass'y (CT-J310WR)	REA1051
	10	Indicator lens	RNK1591		39	Sub panel (CT-J410WR)	RAH2113
						Sub panel (CT-J310WR)	RAH2123
	11	Operation button Ass'y (CT-J410WR)	RXA1506		101	Main unit (CT-J410WR)	RWZ2710
		Operation button Ass'y (CT-J310WR)	RXA1535			Main unit (CT-J310WR)	RWZ2705
	12	Center knob	RAC1732	NSP	102	Transistor unit	RWZ2711
	13	Slide SW knob	RAC1774	NSP	103	Operate 1 unit (CT-J410WR)	RWZ2713
	14	Eject knob L	RAC1767			Operate 1 unit (CT-J310WR)	RWZ2708
	15	Eject knob R	RAC1768	NSP	104	Operate 2 unit (CT-J410WR)	RWZ2714
	16	Slide VR knob (CT-J410WR)	RAC1737	NSP		Operate 2 unit (CT-J310WR)	RWZ2709
	17	Door lens L	RAH2115		105	Display unit (CT-J410WR)	RWZ2712
	18	Door lens R	RAH2114			Display unit (CT-J310WR)	RWZ2707
	19	Remaining sheet	REE - 113				
	20	Name plate	AAM1047				
	21	Foot assembly	RXA1448	NSP	106	PCB spacer	PNY - 404
	22	Front panel (CT-J410WR)	RAH2106	NSP	107	Main chassis	RNB1072
		Front panel (CT-J310WR)	RAH2117	NSP	108	Mechanism shield plate	RNE1503
	23	Door panel L (CT-J410WR)	RAH2108	NSP	109	Rear panel (CT-J410WR/AB)	RNA1605
		Door panel L (CT-J310WR)	RAH2118			Rear panel (CT-J410WR/AEM, ADL)	RNA1653
	24	Door panel R (CT-J410WR)	RAH2109	NSP		Rear panel (CT-J310WR/AB)	RNA1606
		Door panel R (CT-J310WR)	RAH2119	NSP		Rear panel (CT-J310WR/AEM, ADL)	RNA1654
	25	Azimuth cover	RNK1849	NSP	110	Cushion	REB1091
	26	FL lens (CT-J410WR)	RAH2167	NSP	111	Foot	RNK1770
		FL lens (CT-J310WR)	RAH2120	NSP	112	LED holder (CT-J310WR)	RNK1810
	27	Screw	BBZ30P060FZK	NSP	113	Unit spacer	PEB1164
	28	Screw	BBZ30P080FMC				
	29	Screw	BBZ30P100FZK				
	30	Screw	IBZ30P150FCU				

Exterior

NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.



CT-J310WR only

1.2 MECHANISM UNIT 1 (RYM1191): CT-J410WR and CT-J310WR
MECHANISM UNIT 2 (RYM1192): CT-J410WR
MECHANISM UNIT 2 (RYM1193): CT-J310WR

Note: As for difference between RYM1192 and RYM1193 of mechanism unit 2, RYM1193 is not provided with metal SW.

A

A

B

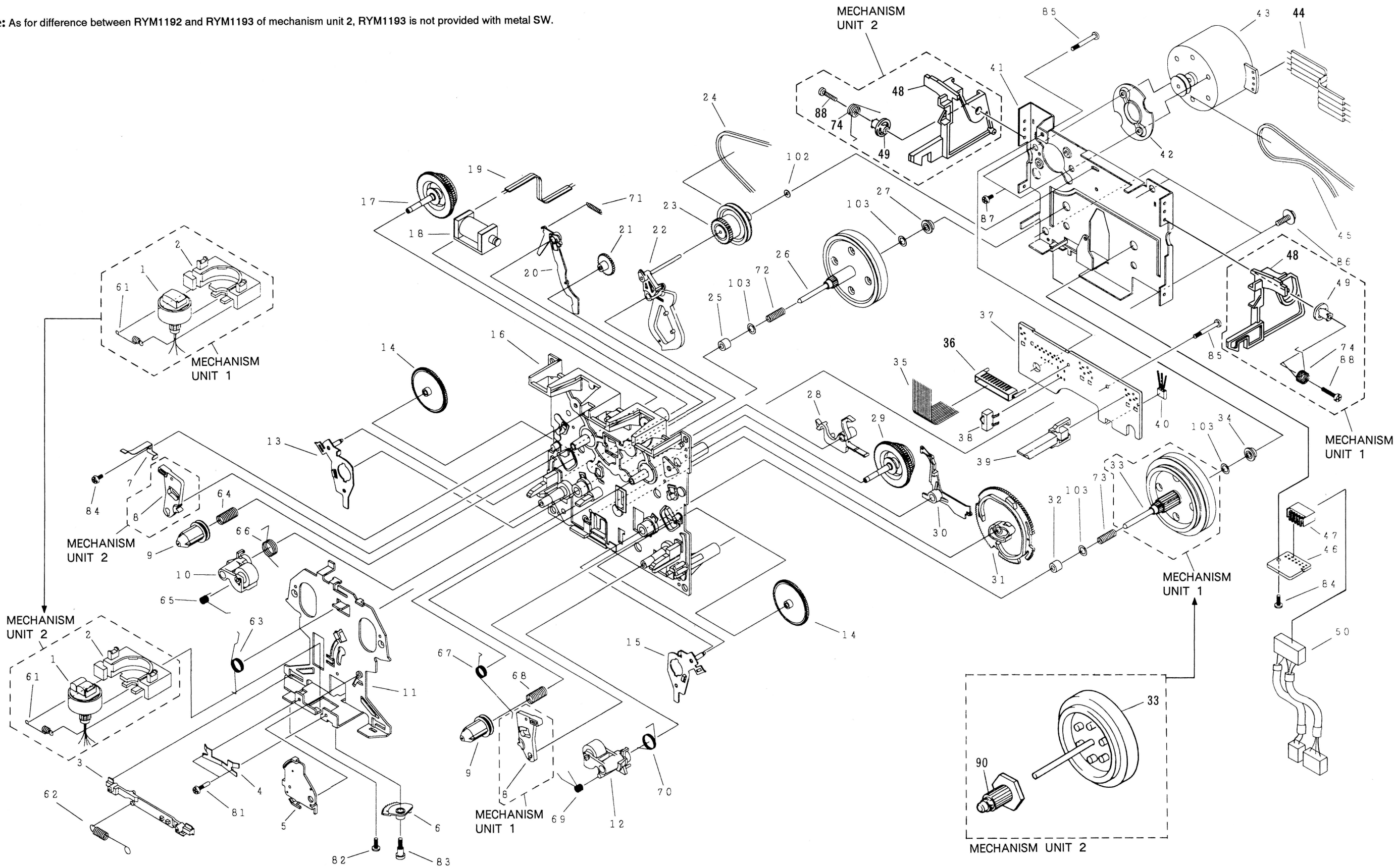
B

C

C

D

D



Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	ASS'Y HOLDER HEAD (Mechanism unit 2)	RXA1477	41	BRACKET FW	RNE1438	
		ASS'Y HOLDER HEAD (Mechanism unit 1)	RXA1500	42	SPACER	RNK1822	
	2	FLAME HEAD	RNK1715	43	ASS'Y MOTOR (Mechanism unit 2)	RXM1063	
	3	LEVER HEAD	RNK1716		ASS'Y MOTOR (Mechanism unit 1)	RXM1062	
	4	SPRING AZIMUTH	RBK1006	44	WIRE	RDD1012	
	5	ASS'Y ARM ASSIST	RXA1401	45	BELT MAIN (Mechanism unit 1)	REB1159	
	6	GEAR ARM HEAD	RNK1717		BELT MAIN (Mechanism unit 2)	REB1162	
	7	SPRING CASSETTE	RBK1039	46	P.C. BOARD	RNP1348	
	8	EJECT LOCK	RNK1718	47	HOUSING (Mechanism unit 2)	RKP1397	
	9	CAP REEL	RNK1719		HOUSING (Mechanism unit 1)	RKP1396	
	10	ASS'Y PINCH ARM L	RXA1403	48	EJECT LEVER L (Mechanism unit 2)	RNK1702	
	11	CHASSIS HEAD	RNE1437		EJECT LEVER R (Mechanism unit 1)	RNK1703	
	12	ASS'Y PINCH ARM R	RXA1404	49	COLLAR	RNK1704	
	13	ARM PLAY L	RNK1866	50	WIRE HEAD (Mechanism unit 2)	RKP1502	
	14	GEAR PLAY	RNK1867		WIRE HEAD (Mechanism unit 1)	RKP1501	
	15	ARM PLAY R	RNK1868	61	SPRING	RBH1282	
	16	CHASSIS OS.	RXA1411	62	SPRING	RBH1283	
△	17	ASS'Y SUB REEL L	RXA1407	63	SPRING	RBH1284	
	18	SOLENOID	RXP1020	64	SPRING	RBH1286	
	19	WIRE	RDC1006	65	SPRING	RBH1288	
	20	ARM RVS	RNK1721	66	SPRING	RBH1291	
	21	GEAR FF	RNK1723	67	SPRING	RBH1285	
	22	ASS'Y ARM FR	RXA1412	68	SPRING	RBH1287	
	23	ASS'Y PULLEY FR	RXA1413	69	SPRING	RBH1289	
	24	BELT FR	REB1158	70	SPRING	RBH1290	
	25	METAL	RNG1048	71	SPRING	RBH1292	
	26	ASS'Y FLYWHEEL L (Mechanism unit 1)	RXA1423	72	SPRING	RBH1061	
		ASS'Y FLYWHEEL L (Mechanism unit 2)	RXA1476	73	SPRING	RBH1325	
	27	METAL	RNG1005	74	SPRING (L) (Mechanism unit 2)	RBH1294	
	28	ARM BRAKE	RNK1724		SPRING (R) (Mechanism unit 1)	RBH1293	
	29	ASS'Y SUB REEL R	RXA1408	81	SCREW	RBA1023	
	30	ARM TRIGGER	RNK1722	82	SCREW	RBA1027	
	31	GEAR CAM	RNK1725	83	SCREW	RBA1030	
	32	METAL	RNG1049	84	SCREW	PCZ20P040FMC	
	33	ASS'Y FLYWHEEL R (Mechanism unit 1)	RXA1424	85	SCREW	RBA1093	
		ASS'Y FLYWHEEL R (Mechanism unit 2)	RXA1415	86	SCREW	RBA1094	
	34	METAL	RNG1004	87	SCREW	RBA1100	
	35	WIRE (14P) (Mechanism unit 2)	RDD1217	88	SCREW	RBA1095	
		WIRE (12P) (Mechanism unit 1)	RDD1249	89		
	36	HOLDER WIRE	RNK1683	90	GEAR FW R (Mechanism unit 2)	RNK1733	
	37	P.C. BOARD	RNP1436	101		
	38	SWITCH MODE	RSN1020	102	WASHER	RBH1046	
	39	SWITCH (LEAF)	RSN1019	103	WASHER	WA26D047D013	
	40	HALL IC.	DN6851A				

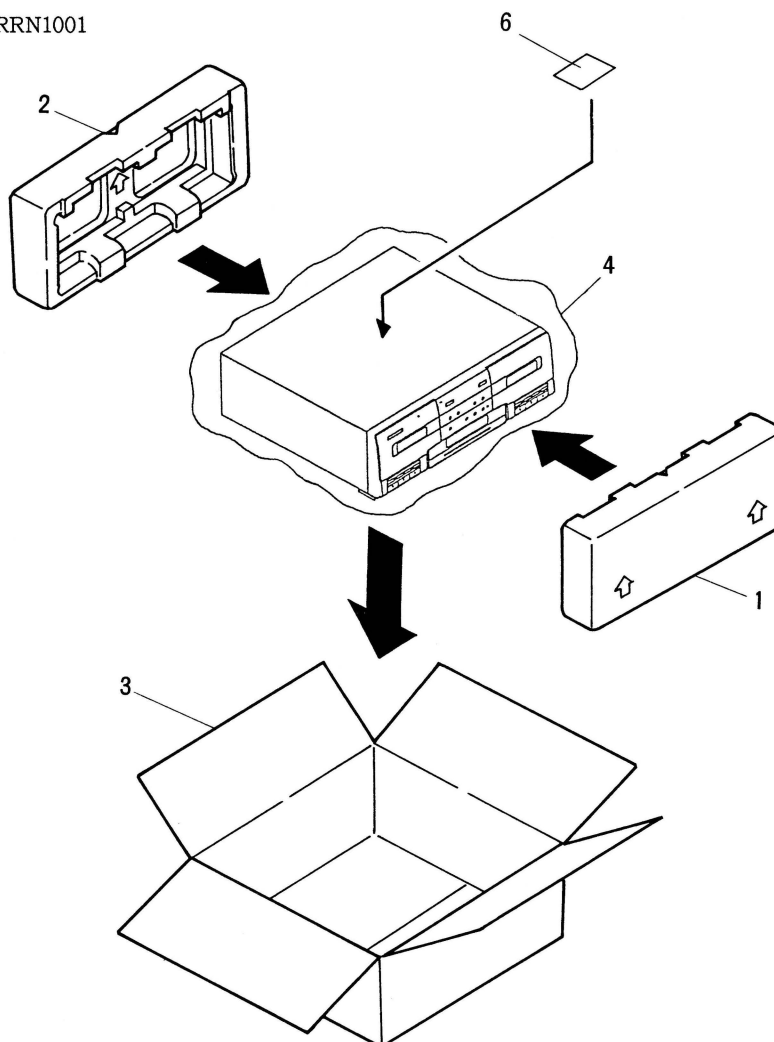
2. PACKING AND PARTS LIST

NOTES:

- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “ \odot ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The instruction manual is packed with the units of M-J310 and M-J410.

Parts List

Mark	No.	Description	Part No.
	1	Pad (F)	RHA1100
	2	Pad (R)	RHA1102
	3	Packing case (CT-J410WR/AB, AEM)	RHG1393
		Packing case (CT-J410WR/ADL)	RHG1424
		Packing case (CT-J310WR/AB, AEM)	RHG1394
		Packing case (CT-J310WR/ADL)	RHG1425
	4	Sheet	RHX1006
	5	
	6	Caution card (CT-J410WR/AB, CT-J310WR/AB only)	RRN1001



3. PCB CONNECTION AND SCHEMATIC DIAGRAM

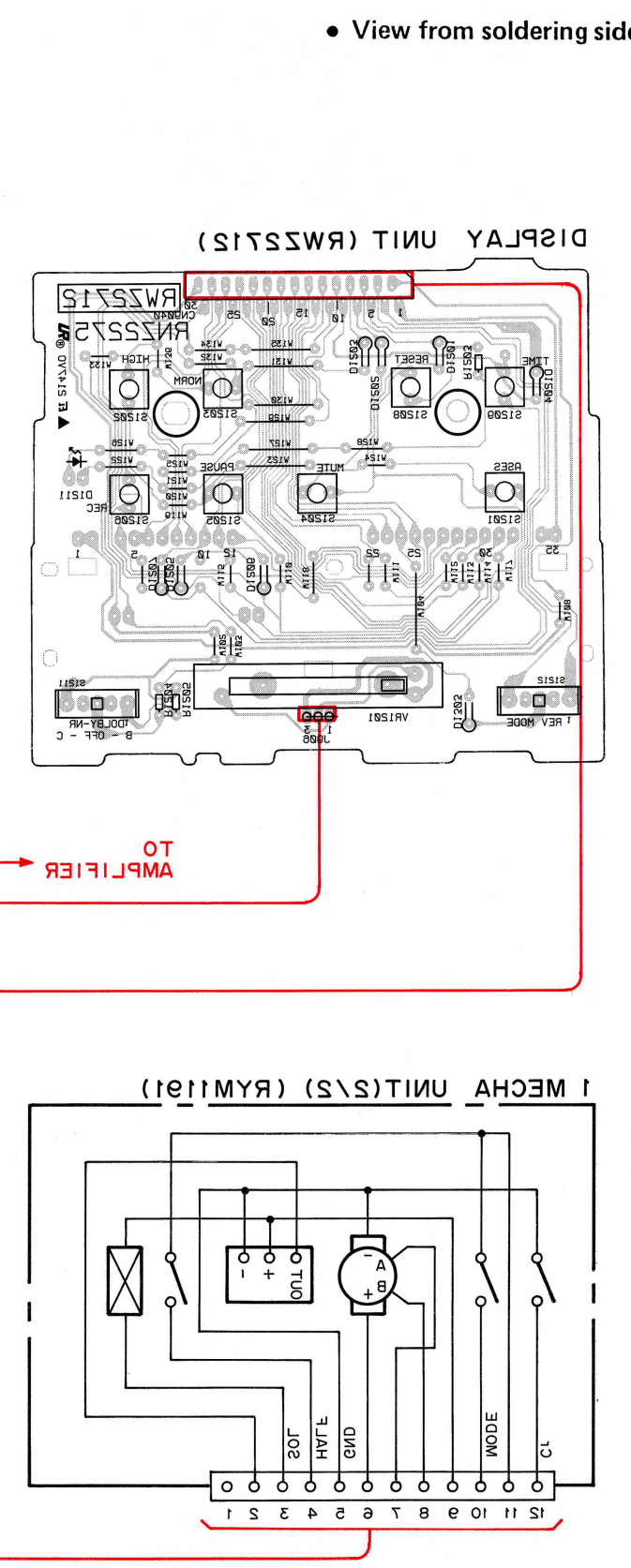
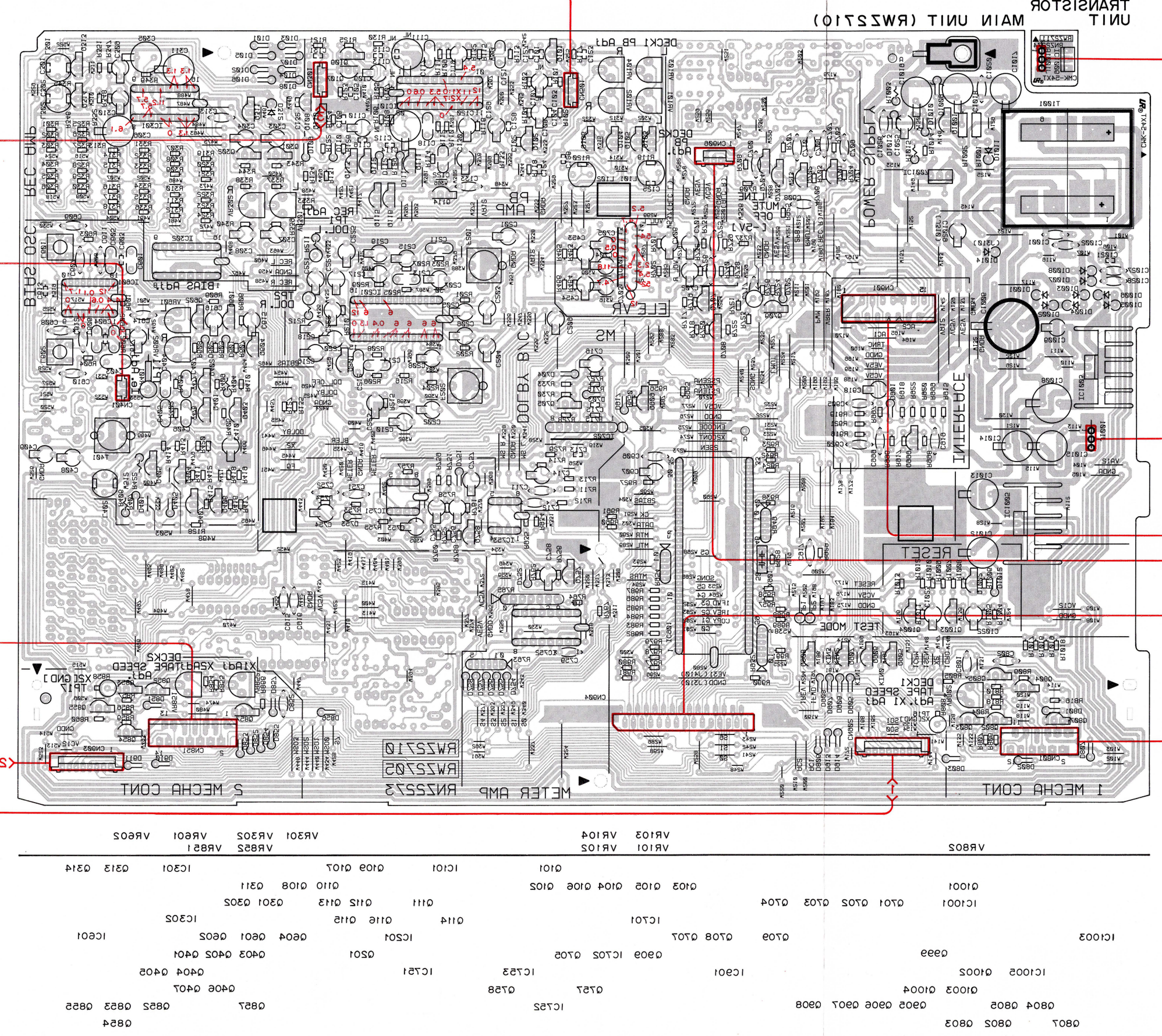
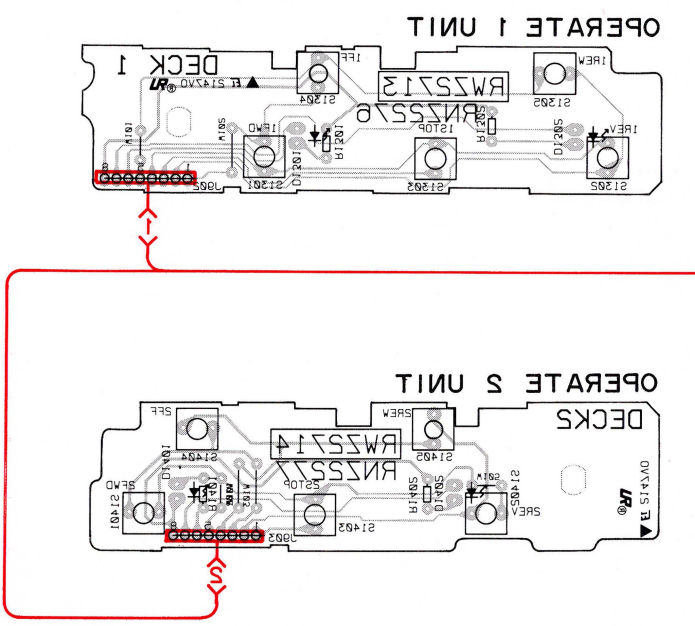
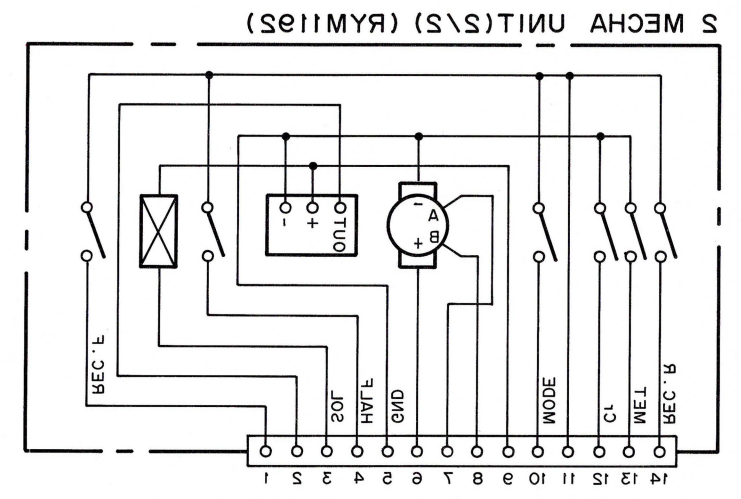
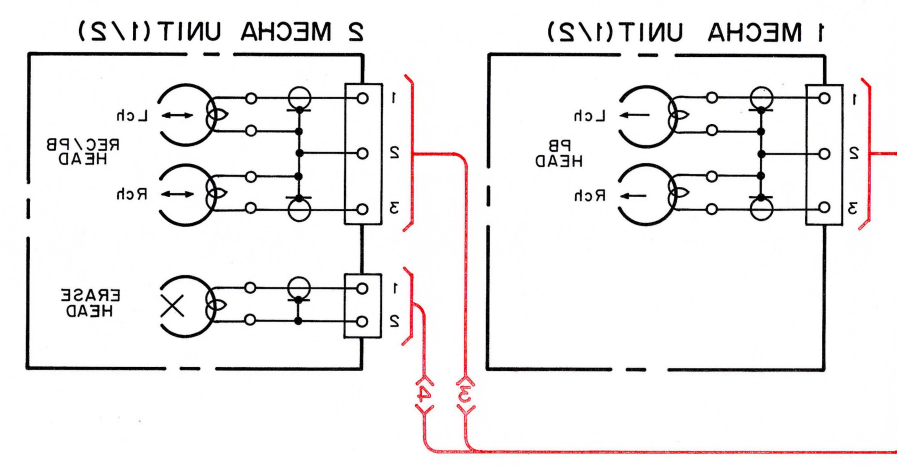
1. FOR CT-410WR

A

B

C

D



A

B

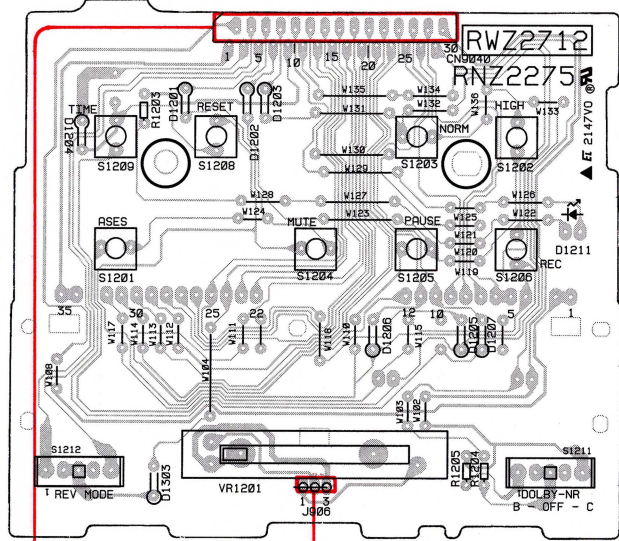
C

D

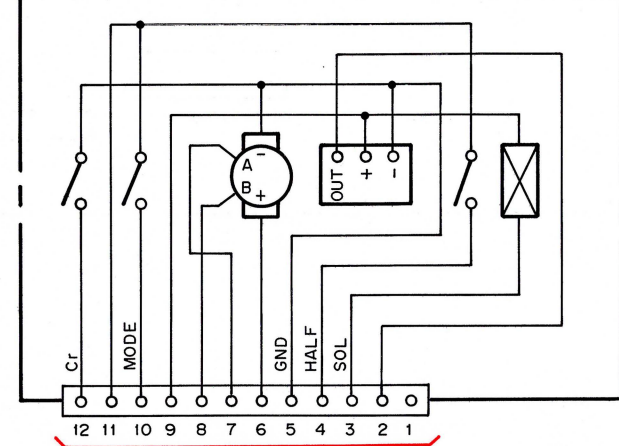
• View from soldering side

A ● View from component side

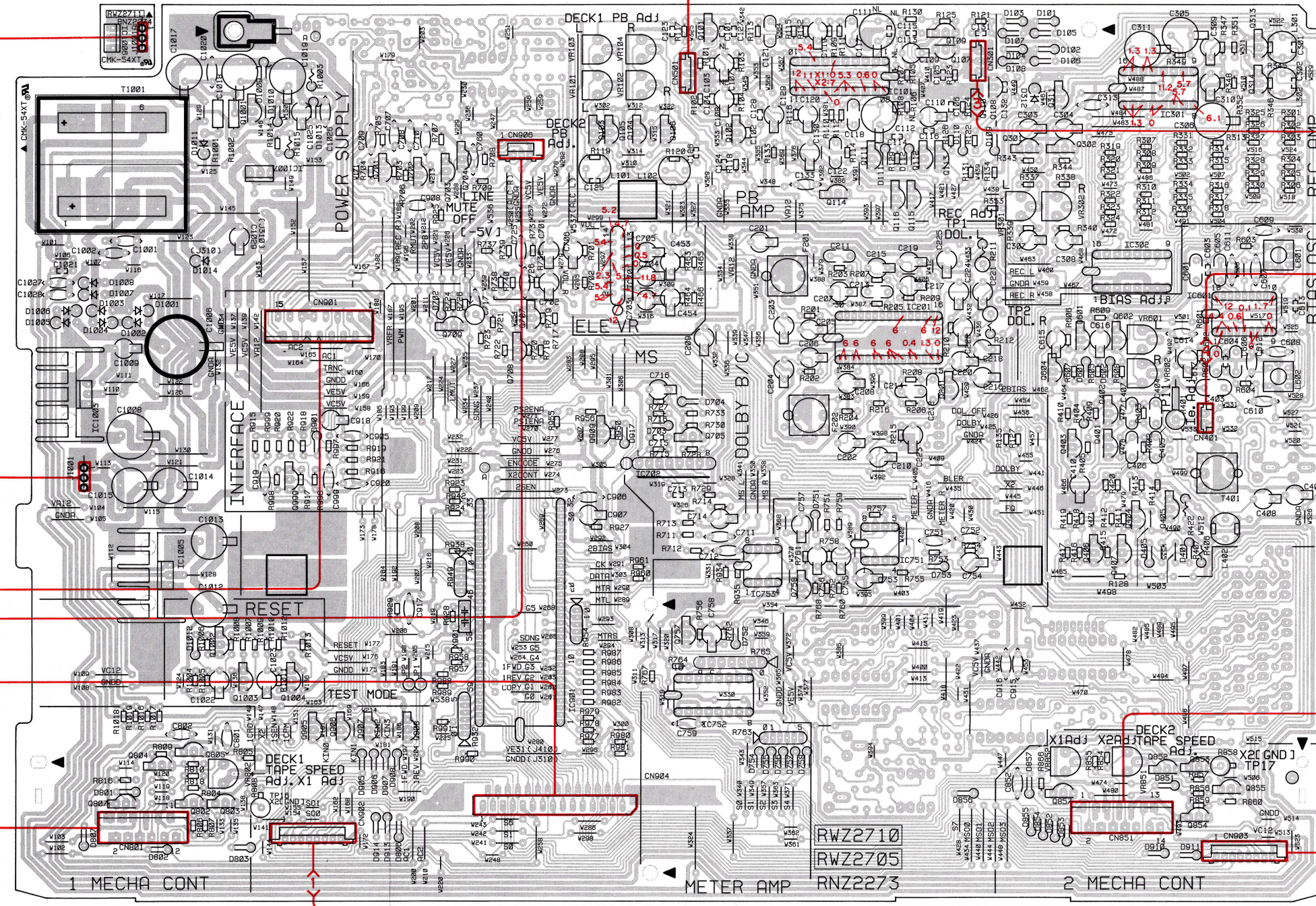
DISPLAY UNIT (RWZ2712)



1 MECHA UNIT(2/2) (RYM1191)

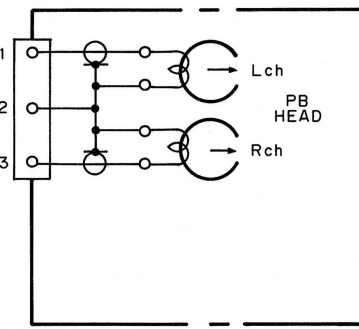


TRANSISTOR UNIT MAIN UNIT (RWZ2710)

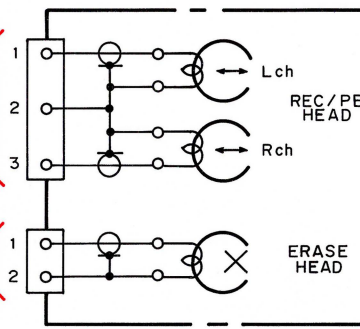


VR802	VR103	VR104	VR301	VR302	VR601	VR602
	VR101	VR102	VR852	VR851		
Q1001	Q103	Q105	Q104	Q106	Q102	
IC1001	Q701	Q702	Q703	Q704		
IC1003	Q709	Q708	Q707			
Q999	Q909	IC702	Q705			
IC1005	Q1002	IC901	IC753	IC751		
Q804	Q805	Q1003	Q1004	Q757	Q758	
Q807	Q802	Q803	Q905	Q906	Q907	Q908

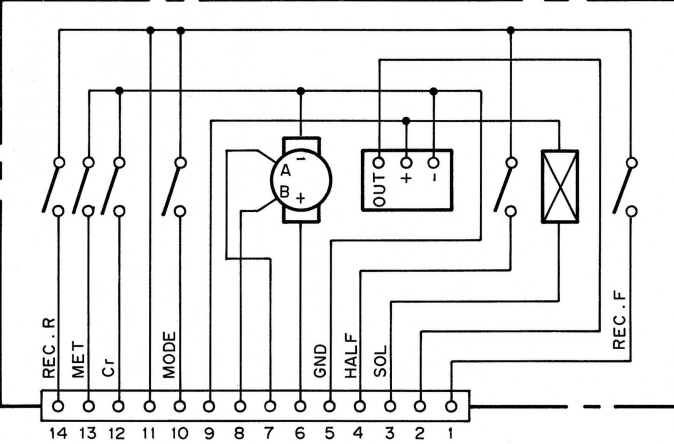
1 MECHA UNIT(1/2)



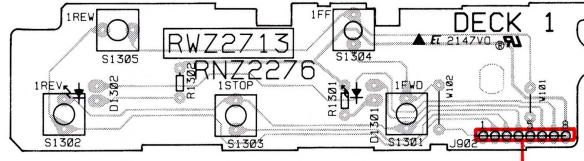
2 MECHA UNIT(1/2)



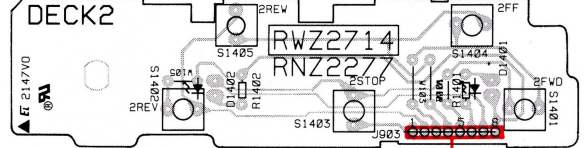
2 MECHA UNIT(2/2) (RYM1192)



OPERATE 1 UNIT



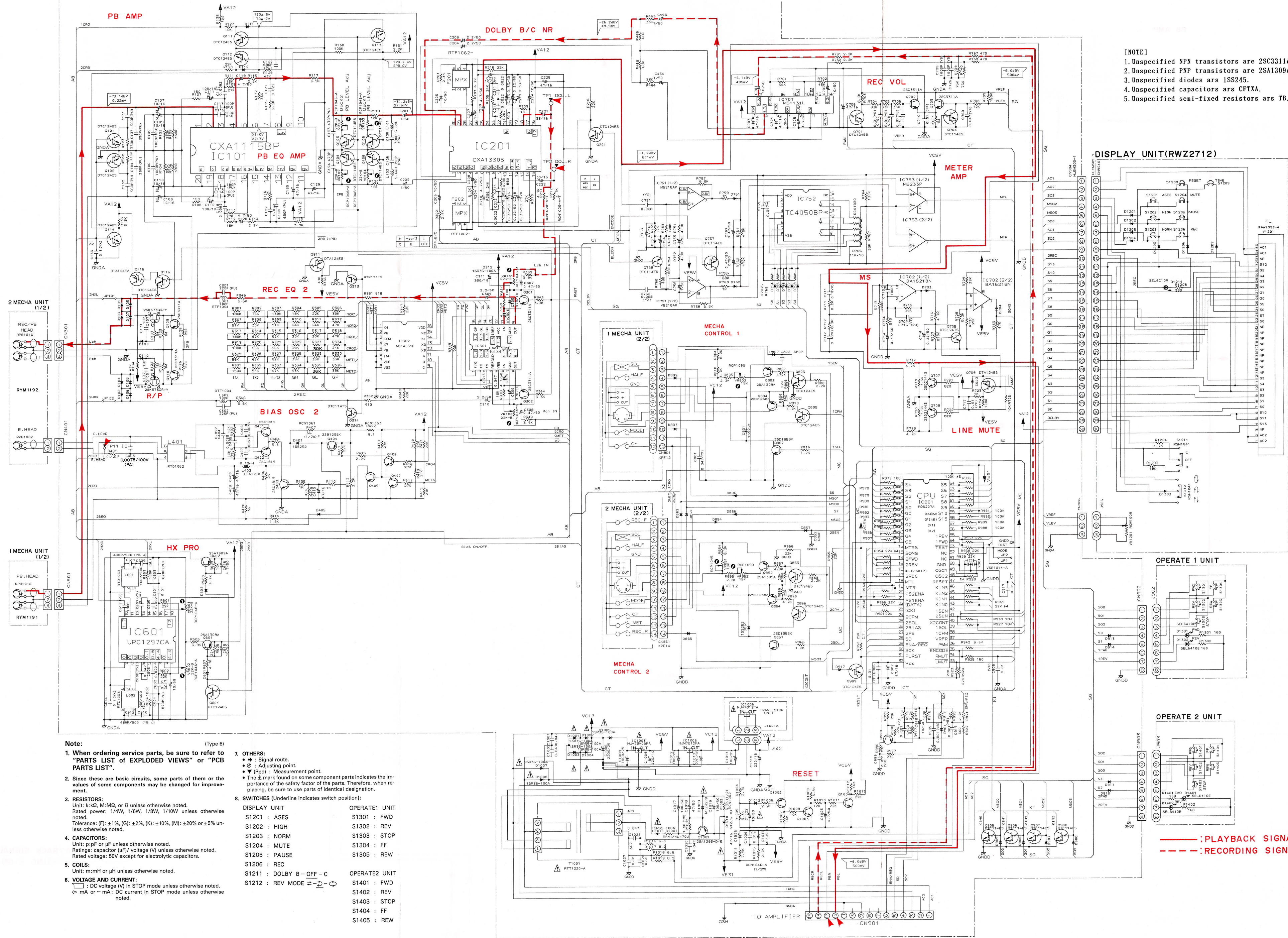
OPERATE 2 UNIT



P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styroly capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

- This P.C.B. connection diagram is viewed from the parts mounted side.
- The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
- The capacitor terminal marked with shows negative terminal.
- The diode marked with C shows cathode side.
- The transistor terminal marked with shows emitter.

MAIN UNIT (RWZ2710)

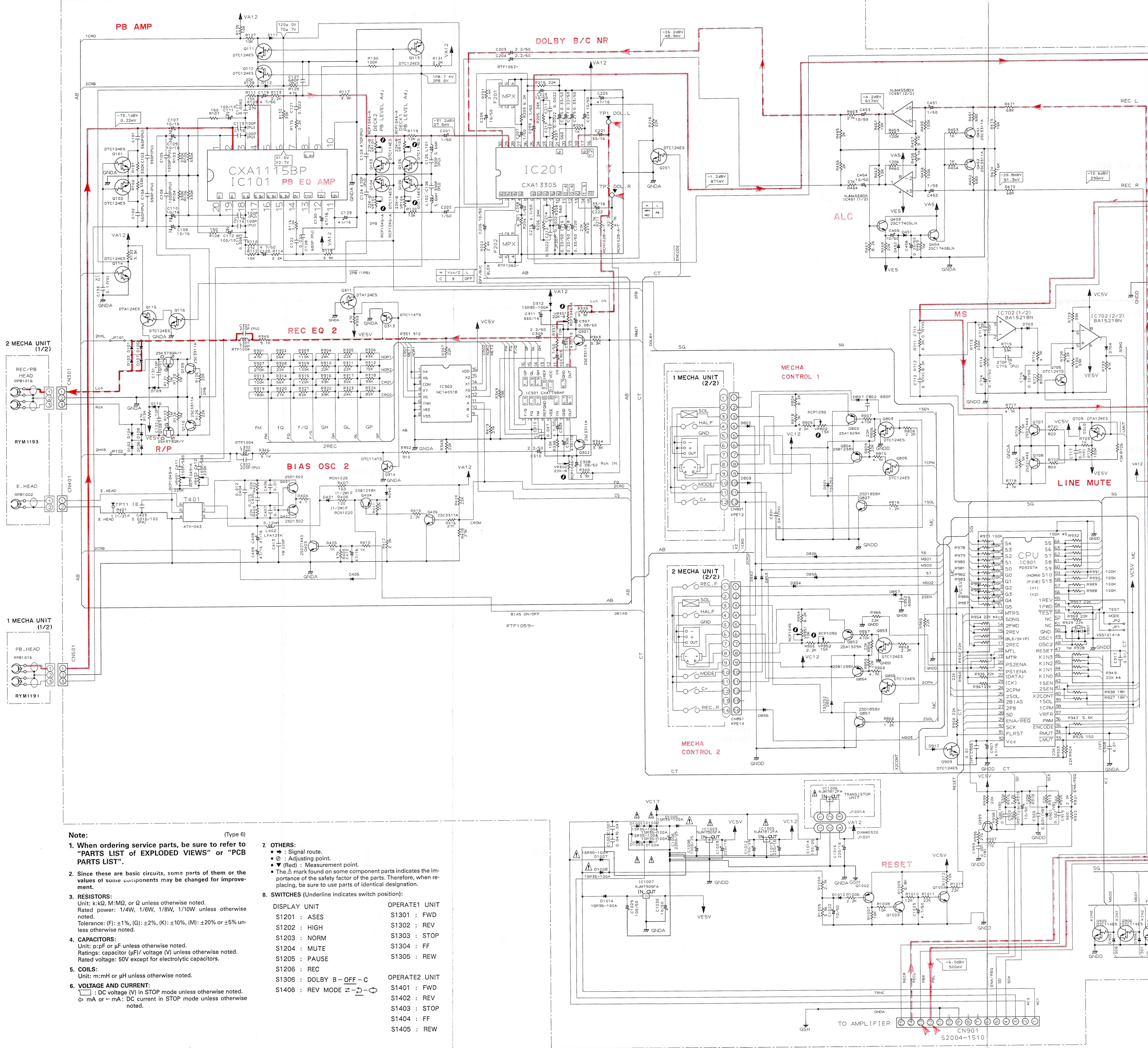


- [NOTE]
1. Unspecified NPN transistors are 2SC3311A.
 2. Unspecified PNP transistors are 2SA1309A.
 3. Unspecified diodes are 1SS245.
 4. Unspecified capacitors are CFTXA.
 5. Unspecified semi-fixed resistors are TB.

- Note: (Type 6)
1. When ordering service parts, be sure to refer to "PARTS LIST OF EXPLODED VIEWS" or "PCB PARTS LIST".
 2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
 3. RESISTORS:
Unit: k:K, M:MQ, or Q unless otherwise noted.
Rated power: 1/4W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
 4. CAPACITORS:
Unit: p:PF or PF unless otherwise noted.
Ratings: capacitor (μF) voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
 5. COILS:
Unit: m:mH or μH unless otherwise noted.
 6. VOLTAGE AND CURRENT:
DC voltage (V) in STOP mode unless otherwise noted.
mA or -mA: DC current in STOP mode unless otherwise noted.
7. OTHERS:
● : Signal route.
○ : Adjusting point.
◀ (Red) : Measurement point.
The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. SWITCHES (Underline indicates switch position):
- | DISPLAY UNIT | OPERATE 1 UNIT | OPERATE 2 UNIT |
|---------------------------|----------------|----------------|
| S1201 : ASES | S1301 : FWD | S1401 : FWD |
| S1202 : HIGH | S1302 : REV | S1402 : REV |
| S1203 : NORM | S1303 : STOP | S1403 : STOP |
| S1204 : MUTE | S1304 : FF | S1404 : FF |
| S1205 : PAUSE | S1305 : REW | S1405 : REW |
| S1206 : REC | | |
| S1211 : DOLBY B - OFF - C | | |
| S1212 : REV MODE | | |

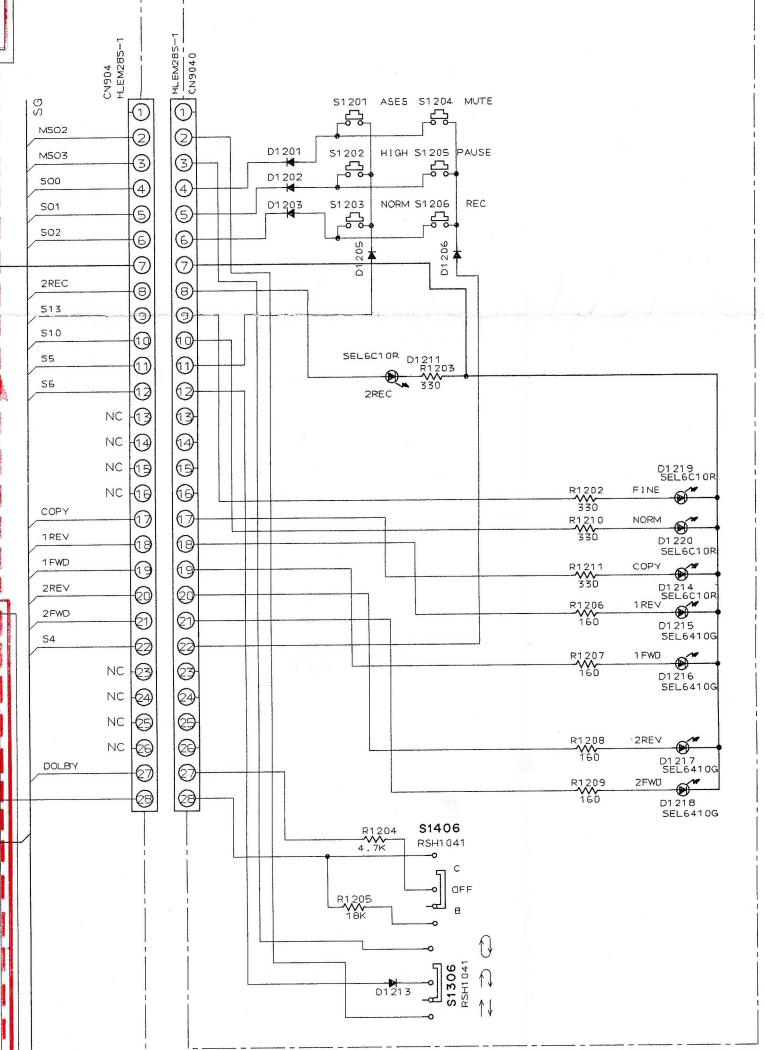
— :PLAYBACK SIGNAL
--- :RECORDING SIGNAL

MAIN UNIT (RWZ2705)

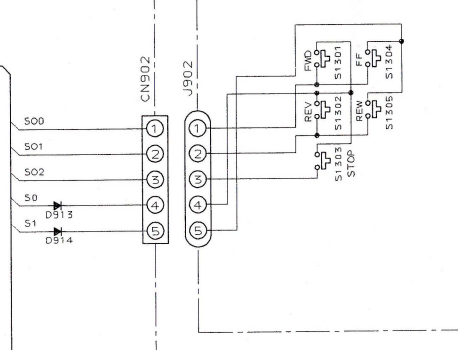


- [NOTE]
- 1. Unspecified NPN transistors are 2SC3311A.
 - 2. Unspecified PNP transistors are 2SA1309A.
 - 3. Unspecified diodes are 1SS245.
 - 4. Unspecified capacitors are CFTXA.
 - 5. Unspecified semi-fixed resistors are TB.

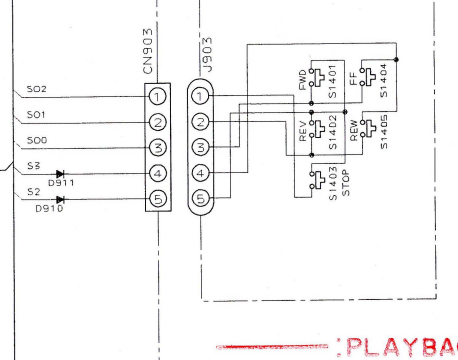
DISPLAY UNIT (RWZ2707)



OPERATE1 UNIT



OPERATE2 UNIT



- Note:** (Type 6)
- 1. When ordering service parts, be sure to refer to "PARTS LIST OF EXPLODED VIEWS" or "PCB PARTS LIST".
 - 2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
 - 3. **RESISTORS:**
Unit: k Ω , M Ω , or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$, (M): $\pm 20\%$ or $\pm 5\%$ unless otherwise noted.
 - 4. **CAPACITORS:**
Unit: p μ F or μ F unless otherwise noted.
Ratings: capacitor (μ F)/voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
 - 5. **COILS:**
Unit: m Ω or μ H unless otherwise noted.
 - 6. **VOLTAGE AND CURRENT:**
□ : DC voltage (V) in STOP mode unless otherwise noted.
⊖ : mA or -mA: DC current in STOP mode unless otherwise noted.
 - 7. **OTHERS:**
● : Signal route.
⊙ : Adjusting point.
● (red) : Measurement point.
● The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
 - 8. **SWITCHES** (Underline indicates switch position):

DISPLAY UNIT	OPERATE1 UNIT
S1201 : ASES	S1301 : FWD
S1202 : HIGH	S1302 : REV
S1203 : NORM	S1303 : STOP
S1204 : MUTE	S1304 : FF
S1205 : PAUSE	S1305 : REW
S1206 : REC	
S1306 : DOLBY B - OFF - C	OPERATE2 UNIT
S1406 : REV MODE	S1401 : FWD
	S1402 : REV
	S1403 : STOP
	S1404 : FF
	S1405 : REW

— : PLAYBACK SIGNAL
--- : RECORDING SIGNAL

• View from component side

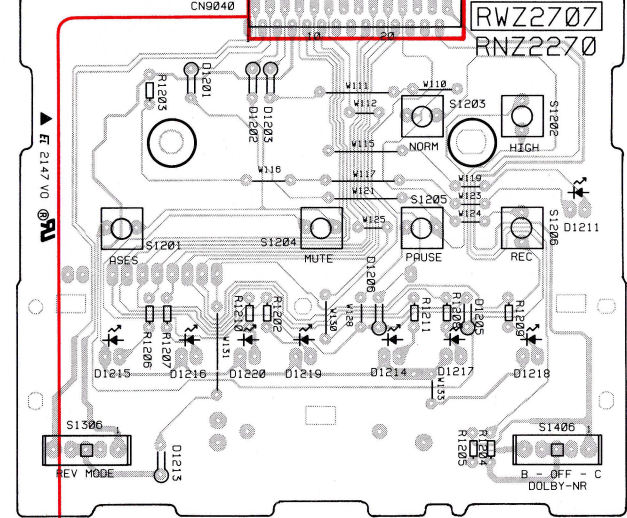
A

B

C

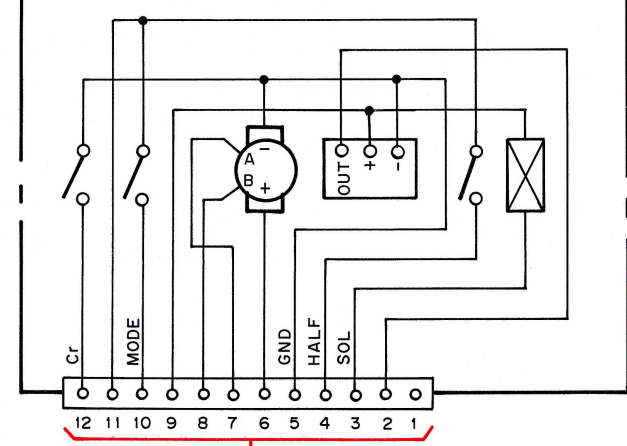
D

DISPLAY UNIT (RWZ2707)

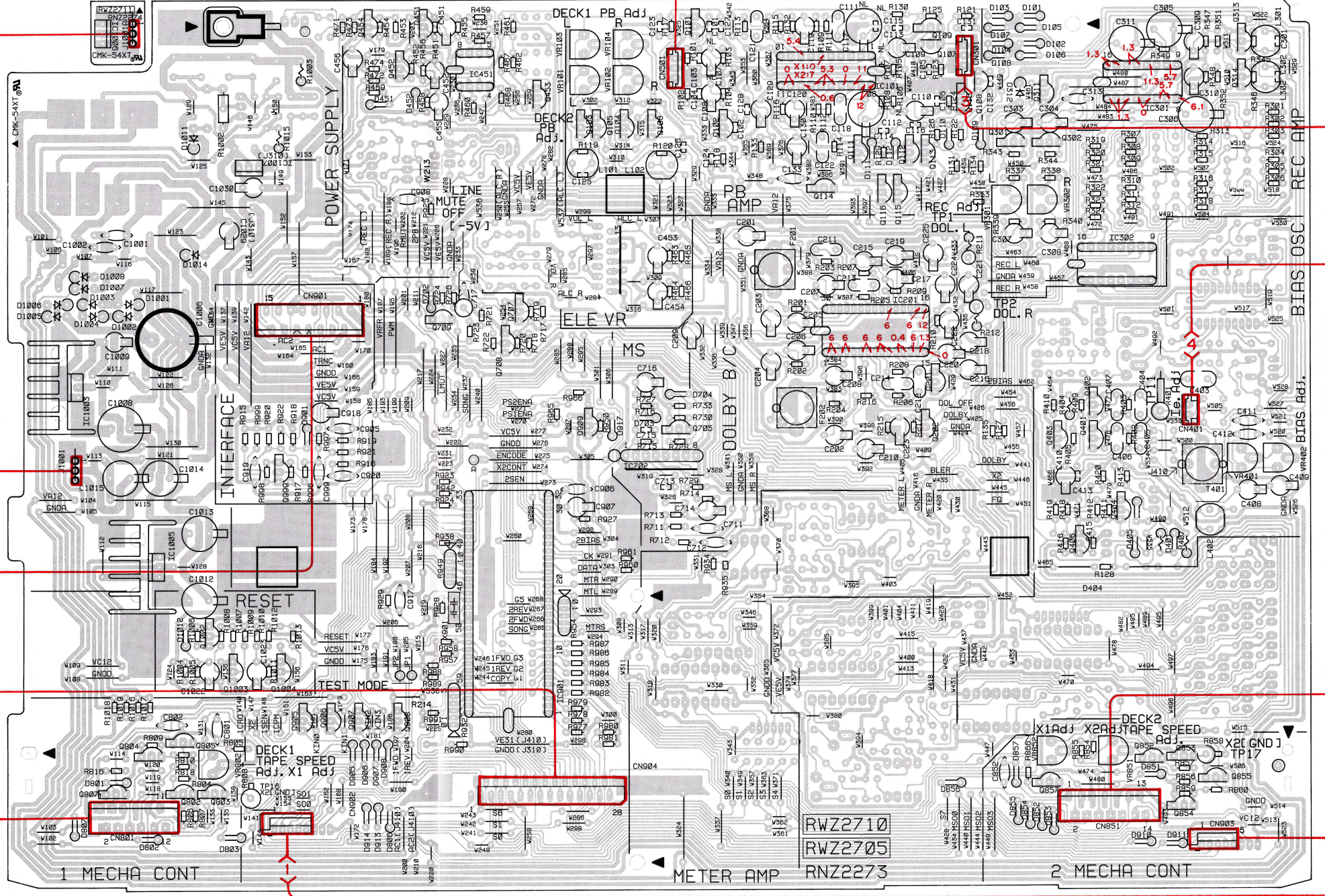


TO AMPLIFIER

1 MECHA_UNIT(2/2) (RYM1191)



TRANSISTOR UNIT
MAIN UNIT (RWZ2705)

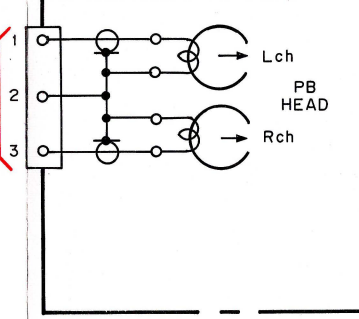


1 MECHA CONT

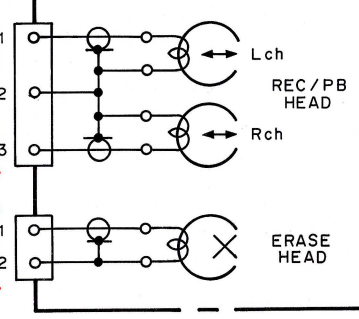
2 MECHA CONT

VR802	VR103	VR104	VR301	VR302	VR401	VR402
	VR101	VR102	VR852	VR851		
IC1003	Q454	Q452	Q451	IC451	Q453	Q101
	Q103	Q105	Q104	Q106	Q102	IC101
	Q709	Q708	Q707	IC201	Q201	Q202
IC1005	Q999	IC901	Q909	IC702	Q705	Q402
Q1002	Q1003	Q1004	Q403	Q401	Q406	Q404
Q804	Q805	Q905	Q906	Q908	Q857	Q852
Q807	Q802	Q803	Q853	Q855	Q854	

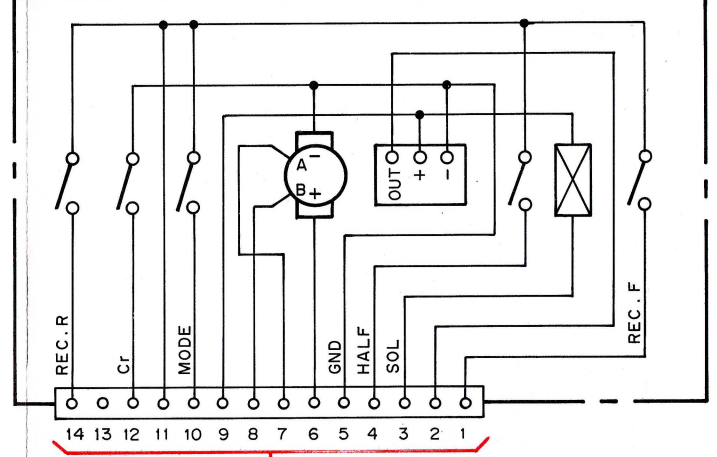
1 MECHA_UNIT(1/2)



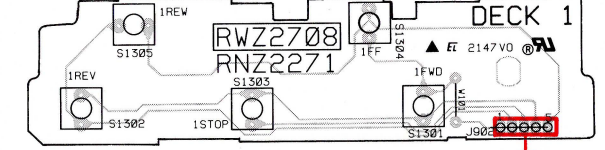
2 MECHA_UNIT(1/2)



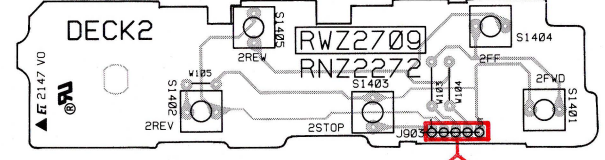
2 MECHA_UNIT(2/2) (RYM1193)



OPERATE 1 UNIT



OPERATE 2 UNIT



P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Smyrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

- This P.C.B. connection diagram is viewed from the parts mounted side.
- The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above table.
- The capacitor terminal marked with shows negative terminal.
- The diode marked with shows cathode side.
- The transistor terminal marked with shows emitter.

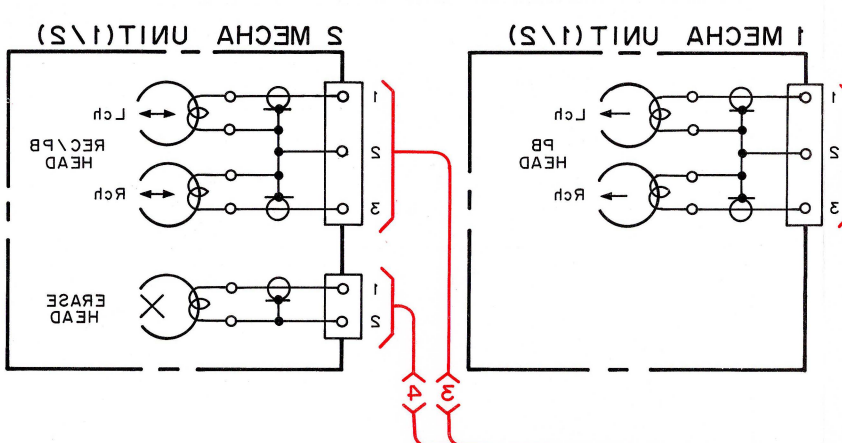
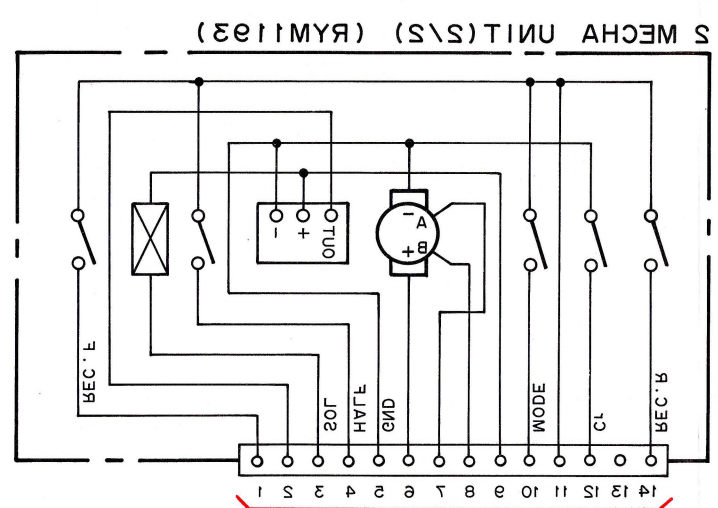
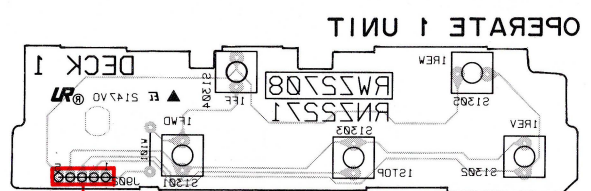
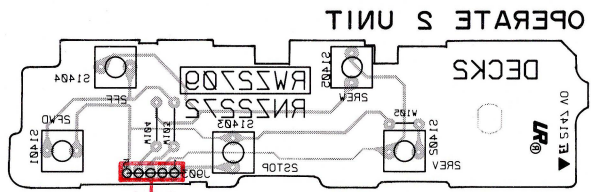
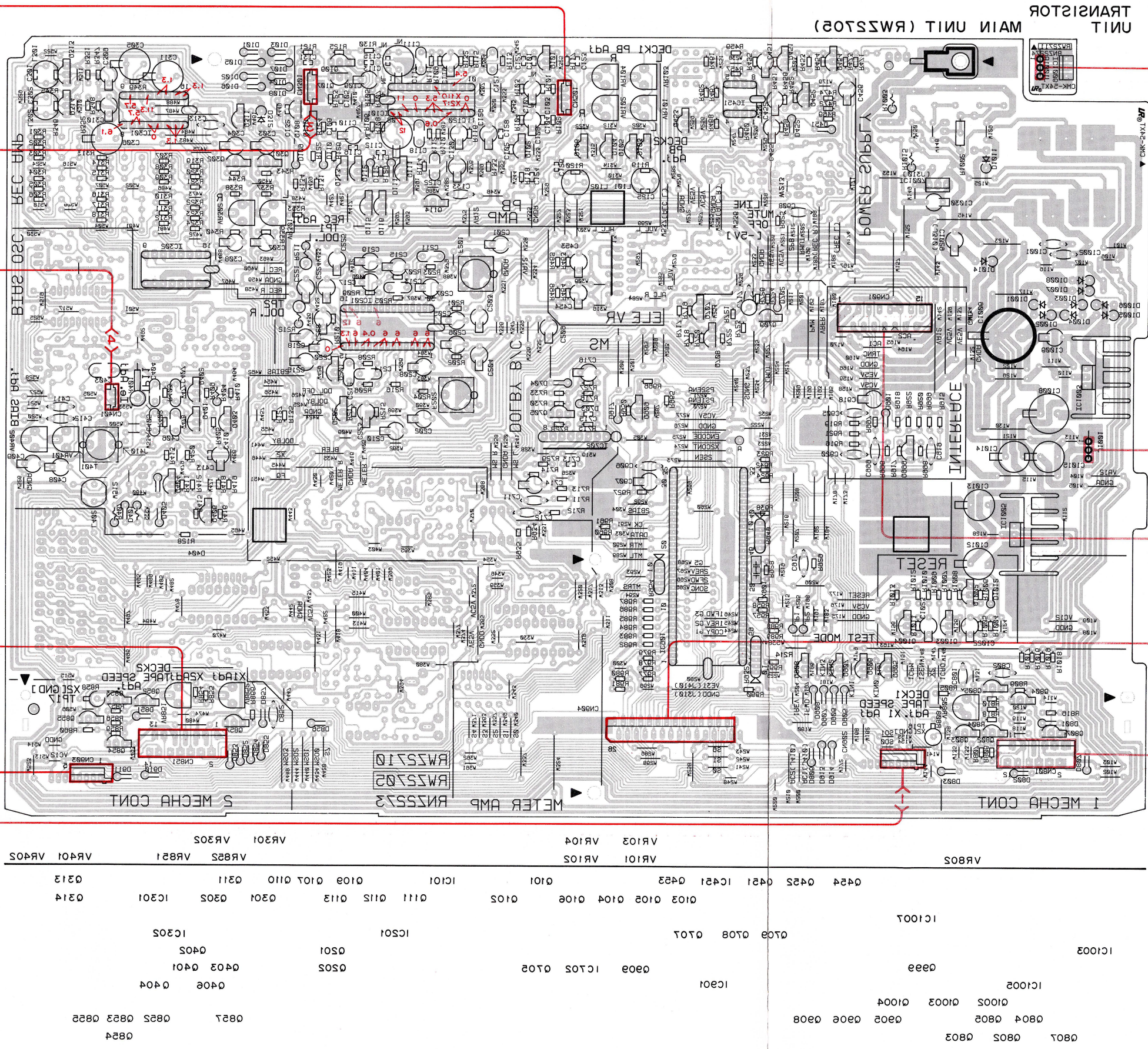
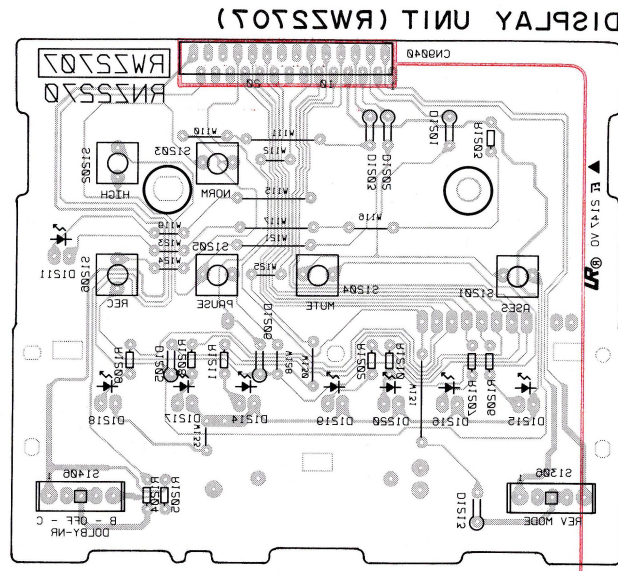
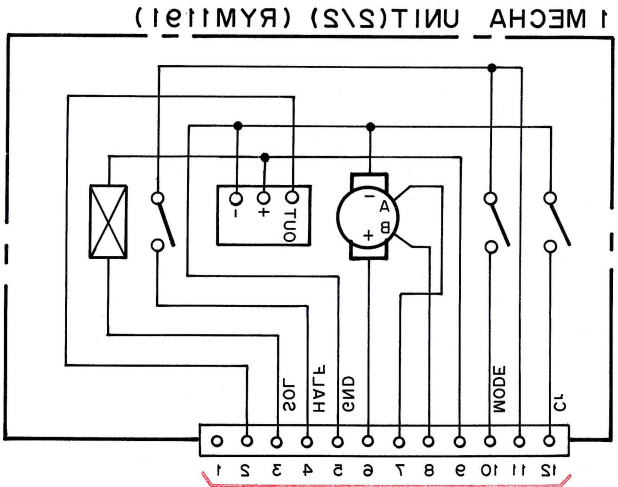
A

B

C

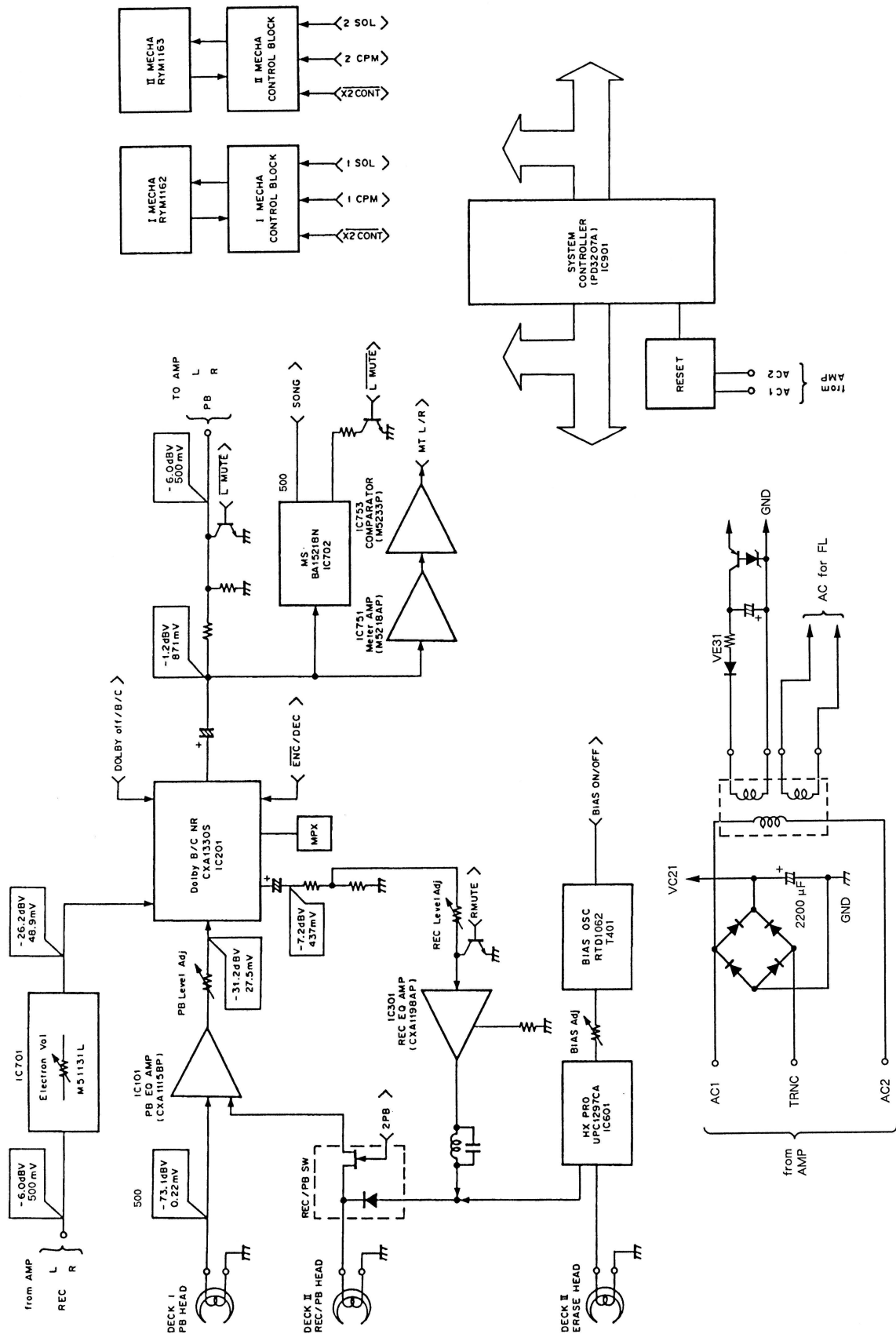
D

View from soldering side

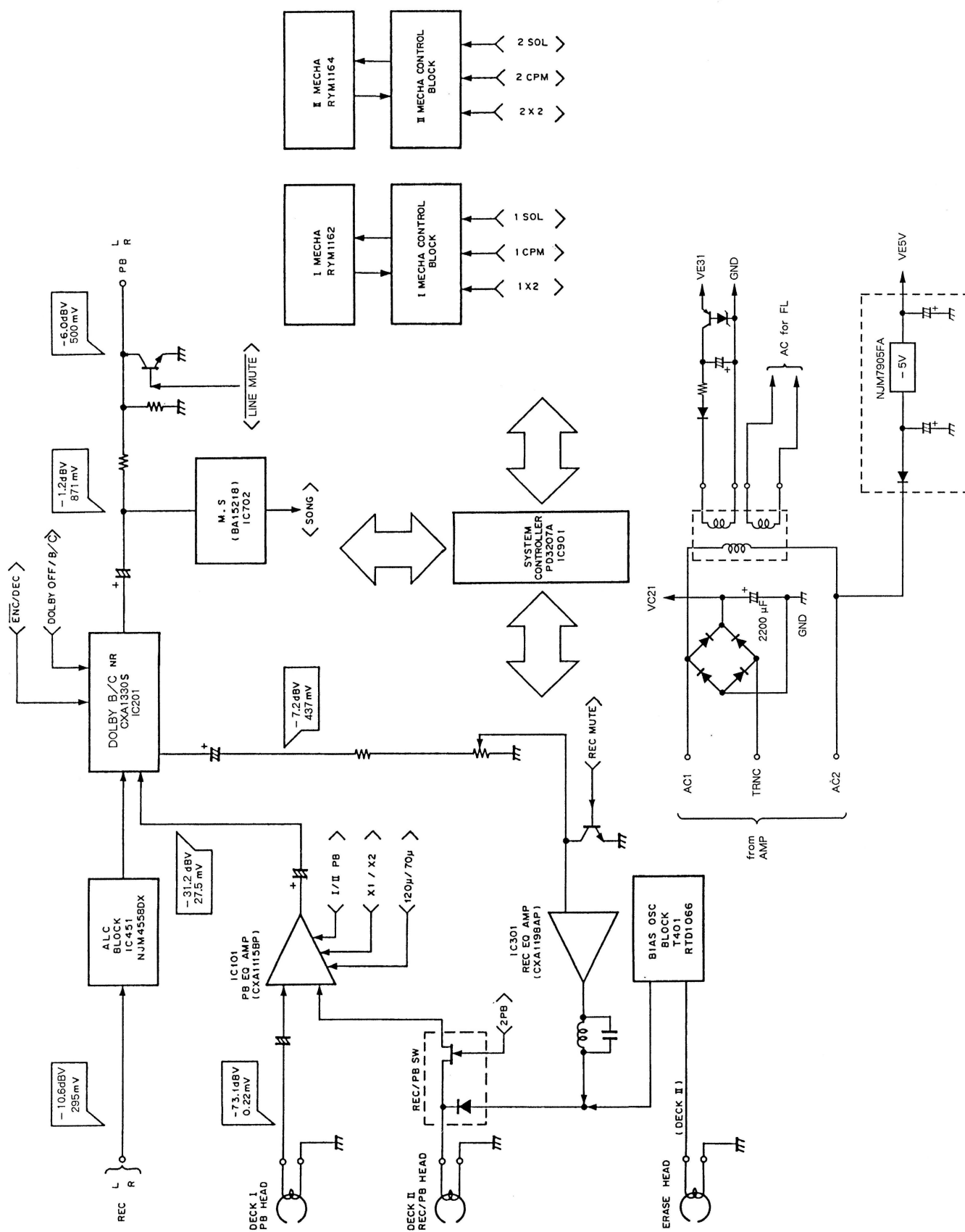


4. BLOCK DIAGRAM

4.1 FOR CT-J410WR



4.2 FOR CT-J310WR



5. PCB PARTS LIST

NOTES:

- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “ \odot ” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω \rightarrow $56 \times 10^1 \rightarrow 561$ RD1/8PM $\begin{bmatrix} 5 & 6 & 1 \end{bmatrix}$ J

47k Ω \rightarrow $47 \times 10^3 \rightarrow 473$ RD1/4PS $\begin{bmatrix} 4 & 7 & 3 \end{bmatrix}$ J

0.5 Ω \rightarrow 0R5 RN2H $\begin{bmatrix} 0 & R & 5 \end{bmatrix}$ K

1 Ω \rightarrow 010 RS1P $\begin{bmatrix} 0 & 1 & 0 \end{bmatrix}$ K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k $\Omega \rightarrow 562 \times 10^1 \rightarrow 5621$ RN1/4PC $\begin{bmatrix} 5 & 6 & 2 & 1 \end{bmatrix}$ F

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
LIST OF ASSEMBLIES							
	MAIN UNIT	RWZ2710 (CT-J410WR)			Q707, Q708		2SD2144S
		RWZ2705 (CT-J310WR)			Q107, Q108		2SK373
		RWZ2711 (CT-J410WR)			Q313, Q314, Q758		DTC114TS
NSP	TRANSISTOR UNIT	RWZ2712 (CT-J410WR)			Q705		DTC124TS
	DISPLAY UNIT	RWZ2707 (CT-J310WR)			Q115, Q311, Q709		XDA124ES
		RWZ2713 (CT-J410WR)			Q103-Q106, Q704, Q757, Q905-Q908		XDC114ES
NSP	OPERATE 1 UNIT	RWZ2708 (CT-J310WR)		Δ	Q101, Q102, Q111-Q114, Q116, Q201, Q604, Q701, Q803, Q805, Q853, Q855, Q909		XDC124ES
		RWZ2714 (CT-J410WR)			D312, D1001-D1008, D1011		1SR35-100AVL
NSP		RWZ2709 (CT-J310WR)			D401, D801, D807, D851		1SS252
					D101-D112, D405, D601, D602, D702-D704, D751-D758, D802, D803, D806, D852-D857, D901, D905-D908, D910, D911, D913, D914, D917, D1012		1SS254
NSP	OPERATE 2 UNIT			Δ	D1009		MTZJ27B
NSP				Δ	D1010, D1013		MTZJ5. 1B
MAIN UNIT (CT-J410WR)				COILS, TRANSFORMERS AND FILTERS			
SEMICONDUCTORS					L402		LFA121K
	IC702	BA15218N			L601, L602 (L=4. 6MH, Q=25, F=105KH)		RTD1053
	IC101	CXA1115BP			L401		RTD1062
	IC301	CXA1198AP			L301, L302 (L=10MH(79. 6KHZ), Q=25)		RTF1004
	IC201	CXA1330S			L101, L102 (L=5. 6MH(252KHZ), Q=30)		RTF1022
	IC701	M51131L			F201, F202		RTF1062
	IC751	M5218AP		Δ	T1001		RTT1220
	IC753	M5233P		CAPACITORS			
Δ	IC1005	NJM7812FA			C609, C610		CCCSL101K500
Δ	IC1003	NJM78M05FA			C131, C132		CCPUSL100J50
	IC901	PD3207A			C107-110		CEANL100M16
	IC752	TC4050BP			C111-C112		CEANL101M10
	IC302	TC4051BP			C201, C202, C207, C208, C453, C454, C755, C756		CEAS010M50
	IC601	UPC1297CA			C205, C206, C223, C224, C615, C617, C701, C702, C918, C1022		CEAS100M50
	Q1001	2SA1283			C1012, C1014		CEAS101M25
	Q601, Q602, Q802, Q852, Q1002	2SA1309A			C1017, C1019		CEAS101M50
	Q404, Q804, Q854	2SB1238X			C1008		CEAS102M25
	Q401-Q403	2SC1815			C1009		CEAS221M10
	Q109, Q110, Q301, Q302, Q405-Q407, Q702, Q703, Q999, Q1003, Q1004	2SC3311A			C1013, C1015		CEAS221M16
	Q807, Q857	2SD1858X					

Mark	No.	Description	Part No.
	C1006		CEAS222M25
	C203, C204, C309, C310		CEAS2R2M50
	C221, C222		CEAS330M16
	C311		CEAS331M16
	C129, C130, C225, C408-C410, C703, C704, C706, C753, C754, C907, C1025		CEAS470M16
	C1018		CEAS470M50
	C305, C306		CEAS471M10
	C119, C120, C209, C210, C303, C304, C616, C705, C1023		CEAS4R7M50
	C217, C218, C716		CEASR22M50
	C215, C216, C219, C220		CEASR33M50
	C307, C308, C714, C757, C758		CEASR47M50
	C601, C602		CFTXA103J50
	C211-C214		CFTXA222J50
	C121, C122, C404, C605, C606		CFTXA223J50
	C405-C407		CFTXA332J50
	C117, C118		CFTXA822J50
	C133, C711, C712		CGCYX104K25
	C614		CGCYX104M25
	C607, C608, C760, C801, C1001, C1002		CGCYX473K25
	C751, C752		CGCYX683K25
	C725, C726, C905, C919, C920, C999		CKCYB102K50
	C707-C709		CKCKY103Z50
	C710, C717, C906, C908, C917, C1026-C1028		CKCYF103Z50
	C313, C759, C1020, C1021		CKCYF473Z50
	C113-C116, C613, C713		CKPUYB101K50
	C105, C106		CKPUYB102K50
	C301, C302		CKPUYB221K50
	C715		CKPUYB271K50
	C103, C104, C125, C126		CKPUYB391K50
	C123, C124		CKPUYB471K50
	C101, C102		CKPUYB561K50
	C127, C128, C802, C852		CKPUYB681K50
	C603, C604		CKPUYB821K50
	C403		CQPA752J100
	C611, C612 (C=430P, V(DC)=500)		RCG1005

RESISTORS

R949, R954 (R=22K, W=1, A=J)	RA4T223J
R932	RA5T104J
R763 (R=22K, W=1, A=J)	RA5T223J
R211, R212 (R=4.7K, W=1/6, A=J)	RCN1028
R404 (R=5R6, W=1/2, A=J)	RCN1033
R1015 (R=2700, W=1/2, A=J)	RCN1046
R407 (R=560, W=1/2, A=J)	RCN1061
R1003 (R=562, W=1/2, A=J)	RCN1062
R422 (R=9R1, W=1/4, A=J)	RCN1063
VR851 (R=10K, W=0.1)	RCP1045
VR101-VR104, VR301, VR302, VR601, VR602 (R=22K, W=0.1)	RCP1046
VR802, VR852 (R=15K, W=0.1)	RCP1090
R765 (R=11K/22K, N=10)	RCX1020
R401	RD1/2LF□□□J
R1001 (R=47, W=1/4, A=J)	RFA1/4L□□□J
R1002 (R=1.5K, W=1, A=J)	RS1LMF□□□J



Mark	No.	Description	Part No.
		OTHER RESISTORS	RD1/6PM□□□J
OTHERS			
	CN904 FFC CONNECTOR 30P		52045-3045
	CN801 CONNECTOR 12P		KPE12
	CN851 CONNECTOR 14P		KPE14
	X901 CERAMIC RESONATOR(4.19MHz)		VSS1014

MAIN UNIT (CT-J310WR)

SEMICONDUCTORS

	IC702	BA15218N
	IC101	CXA1115BP
	IC301	CXA1198AP
	IC201	CXA1330S
	IC451	NJM4558DX
△	IC1005	NJM7812FA
△	IC1003	NJM78M05FA
△	IC1007	NJM7905FA
	IC901	PD3207A
	IC302	TC4051BP
	Q802, Q852, Q1002	2SA1309A
	Q404, Q804, Q854	2SB1238X
	Q453, Q454	2SC1740SLN
	Q109, Q110, Q301, Q302, Q406, Q451, Q452, , Q999, Q1003, Q1004	2SC3311A
	Q401, Q402	2SD1302
	Q807, Q857	2SD1858X
	Q403, Q707, Q708	2SD2144S
	Q107, Q108	2SK373
	Q313, Q314	DTC114TS
	Q705	DTC124TS
	Q115, Q311, Q709	XDA124ES
	Q103-Q106, Q905-Q908	XDC114ES
	Q101, Q102, Q111-Q114, Q116, Q201, Q803, Q805, Q853, Q855, Q909	XDC124ES
△	D312, D1001-D1005, D1007, D1008, D1014	1SR35-100AVL
	D801, D807, D851	1SS252
	D101-D112, D401, D404, D405, D451, D452, D702-D704, D802, D803, D806, D852-D857, D901, D905-D908, D910, D911, D913, D914, D917, D1012	1SS254

COILS, TORANSFORMERS AND FILTERS

T401	ATX-043
L402	LFA121K
L301, L302 (10MH(79.6KHZ), Q=25)	RTF1004
L101, L102 (5.6MH(252KHZ), Q=30)	RTF1022
F201, F202	RTF1062

CAPACITORS

C411, C412	CCCSL101K500
C131, C132	CCPUSL100J50
C107-C110	CEANL100M16
C111, C112	CEANL101M10
C201, C202, C207, C208, C451, C452	CEAS010M50
C205, C206, C223, C224, C453-C455, C918, C1022, C1030	CEAS100M50
C1012, C1014	CEAS101M25
C1029	CEAS101M50

Mark	No.	Description	Part No.
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	C1008		CEAS102M25
	C1009		CEAS221M10
	C1013, C1015		CEAS221M16

	C1006		CEAS222M25
	C203, C204, C309, C310		CEAS2R2M50
	C221, C222		CEAS330M16
	C311		CEAS331M16
	C129, C130, C225, C408-C410, C907		CEAS470M16

	C305, C306		CEAS471M10
	C119, C120, C209, C210, C303, C304, C1023		CEAS4R7M50
	C217, C218, C716		CEASR22M50
	C215, C216, C219, C220, C456		CEASR33M50
	C714		CEASR47M50

	C307, C308		CEASR68M50
	C406, C407		CFTXA103J50
	C404		CFTXA123J50
	C405		CFTXA153J50
	C211-C214		CFTXA222J50

	C121, C122		CFTXA223J50
	C117, C118		CFTXA822J50
	C133, C711, C712		CGCYX104K25
	C801, C1001, C1002		CGCYX473K25
	C905, C919, C920, C999		CKCYB102K50

	C717, C906, C908, C917		CKCYF103Z50
	C313		CKCYF473Z50
	C113-C116, C713		CKPUYB101K50
	C105, C106		CKPUYB102K50
	C301, C302, C413		CKPUYB221K50

	C715		CKPUYB271K50
	C103, C104, C125, C126		CKPUYB391K50
	C123, C124		CKPUYB471K50
	C101, C102		CKPUYB561K50
	C127, C128, C802, C852		CKPUYB681K50

	C403		CQPA162J100
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RESISTORS

R949, R954	(R=22K, W=1, A=J)	RA4T223J
R932	(R=100K, W=1, A=J)	RA5T104J
R408	(R=120, W=1/2, A=J)	PRCN1020
R404	(R=4.7, W=1/2, A=J)	PRCN1022
R407	(R=160, W=1/2, A=J)	PRCN1026

R211, R212	(R=4.7K, W=1/6, A=J)	RCN1028
VR851	(R=10K, W=0.1)	RCP1045
VR101-VR104, VR301, VR302	(R=22K, W=0.1)	RCP1046
VR401, VR402	(R=220K, W=0.1)	RCP1049
VR802, VR852	(R=15K, W=0.1)	RCP1090

R401		RD1/2LF010J
OTHER RESISTORS		RD1/6PM□□□J

OTHERS

CN904 FFC CONNECTOR 28P	52045-2845
CN801 CONNECTOR 12P	KPE12
CN851 CONNECTOR 14P	KPE14
X901 CERAMIC RESONATOR(4.19MHz)	VSS1014

Mark	No.	Description	Part No.
------	-----	-------------	----------

TRANSISTOR UNIT**SEMICONDUCTORS**

△ IC1006	NJM7812FA
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DISPLAY UNIT (CT-J410WR)**SEMICONDUCTORS**

D1201-D1207, D1303	1SS254
D1211	SEL6C10R

SWITCHES

S1201-S1206, S1208, S1209	RSG1033
S1211, S1212	RSH1041

RESISTORS

VR1201 (R=100KB, P=0.05W)	RCW1009
OTHER RESISTORS	RD1/6PM□□□J

OTHERS

CN9040 FFC CONNECTOR 30P	52045-3045
V1201	RAW1097
FL HOLDER	RNK1755

DISPLAY UNIT (CT-J310WR)**SEMICONDUCTORS**

D1201-D1203, D1205, D1206, D1213	1SS254
D1215-D1218	SEL6410E
D1211, D1214, D1219, D1220	SEL6C10R

SWITCHES

S1201-S1206	RSG1033
S1306, S1406	RSH1041

RESISTORS

ALL RESISTORS	RD1/6PM□□□J
---------------	-------------

OTHERS

CN9040 FFC CONNECTOR 28P	52045-2845
--------------------------	------------

OPERATE 1 UNIT**SEMICONDUCTORS**

D1301, D1302	SEL6410E
	(CT-J410WR only)

SWITCHES

S1301-S1305	RSG1033
-------------	---------

RESISTORS

R1301, R1302	RD1/6PM□□□J
	(CT-J410WR only)

OPERATE 2 UNIT**SEMICONDUCTORS**

D1401, D1402	SEL6410E
	(CT-J410WR only)

RESISTORS

R1401, R1402	RD1/6PM□□□J
	(CT-J410WR only)

SWITCHES

S1401-S1405	RSG1033
-------------	---------

6. ADJUSTMENTS

6.1 MECHANICAL ADJUSTMENT

These adjustments must be performed in TEST MODE.

- Entering the TEST MODE
Set the Reverse Mode Switch to \curvearrowright , and short the TEST MODE jumper wire.
- Releasing the TEST MODE
Press the STOP keys of DECKs I and II simultaneously.

1. Tape Speed Adjustment and Check							
No.	Deck	Mode	Test tape	Adjusting points	Specifications/Ratings (playback frequency)	Remarks	
1	I	Normal speed PLAY	STD-301 (3 kHz)	Play back for 1 minute and then press the FF or REW key. *1			
2		Double speed PLAY		check	6000 Hz ± 600 Hz (Pins ⑫ and ⑬ of CN901)		
3		Normal speed PLAY		Press the FF or REW key after checking.			
4	Play back for 1 minute and then press the FF or REW key. *1						
5	II	Double speed PLAY		VR851	Within ± 10 Hz of step 2 (deck I) check value. (CN901 — ⑫, ⑬)		
6		Normal speed PLAY		Press the FF or REW key after checking.			
7				VR852	3020 Hz ± 5 Hz (Pins ⑫ and ⑬ of CN901)		
8		I			VR802		Within ± 5 Hz of step 7 (deck II) adjustment value.

*1: If the FF or REW key is pressed during PLAY, double speed mode is selected.

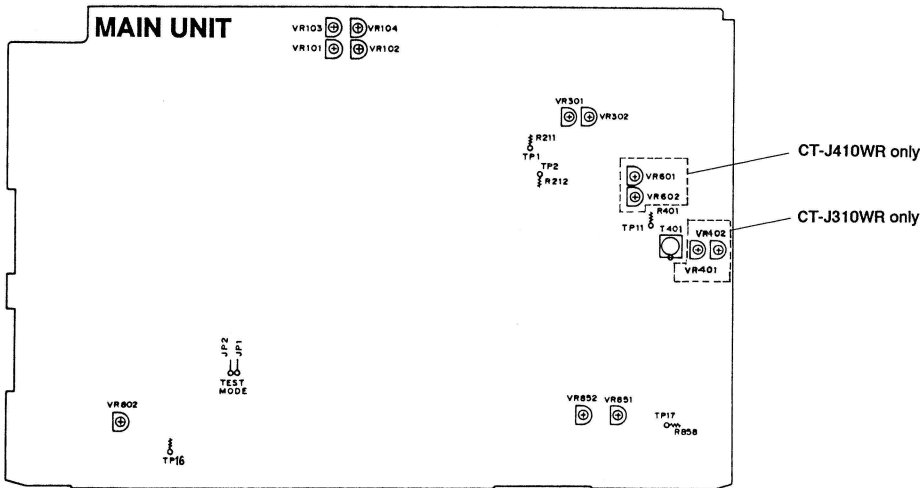


Fig. 6-1 Adjusting points

● Door damping check and adjustment

1. When assembling the front panel attach the door spring to the position (a) according to fig. 6-2, and stand the front panel assembly straight up as shown in fig. 6-3.
2. Open the doors of DECK I and DECK II simultaneously, and when one of the doors is fully open, confirm that the disparity between the two doors is within 15 mm.
3. If the specification described in steps 2 is not satisfied, change the door spring position as follows and adjust.
 - When the door of DECK I opens slower than the one of DECK II: Change the DECK I door spring to position (b).
 - When the door of DECK I opens faster than the one of DECK II: Change the DECK II door spring to position (b).
(Basically adjust the door which opens slower to the faster one.)

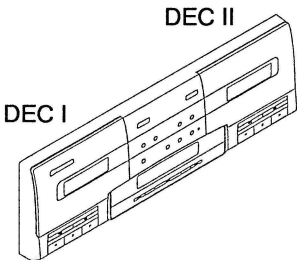


Fig. 6-2

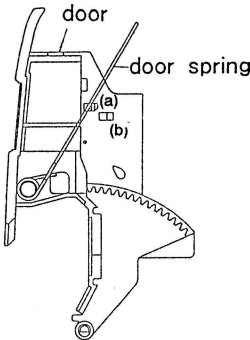


Fig. 6-3

6.2 ELECTRICAL ADJUSTMENTS

Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Turn power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0 dBV=1 Vrms.
5. Connect a 50 k Ω (or between 47k to 52 k Ω) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.

DOLBY NR : OFF
TAPE SELECTOR : NORM

Test Tapes

STD-331E	: Playback adjustments (See Fig. 6-4)
STD-631	: NORMAL blank tape
STD-621	: CrO ₂ blank tape
STD-610	: METAL blank tape

※ As the reference recording level is 250 nwb/m for STD-331E, the recording level will be higher by 4 dB for STD-331B (160 nwb/m). When adjusting, pay careful attention to the type of tape used.

List of Adjustments

Playback sections

1. Head azimuth adjustment.
2. Playback level adjustment.

Recording sections

1. Bias oscillator adjustment.
2. Recording bias adjustment.
3. Recording level adjustment.

NOTE: This unit has an automatic tape selection feature.

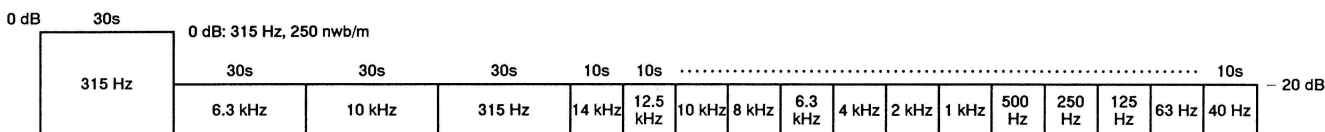


Fig. 6-4 Constants of the test tape STD-331E

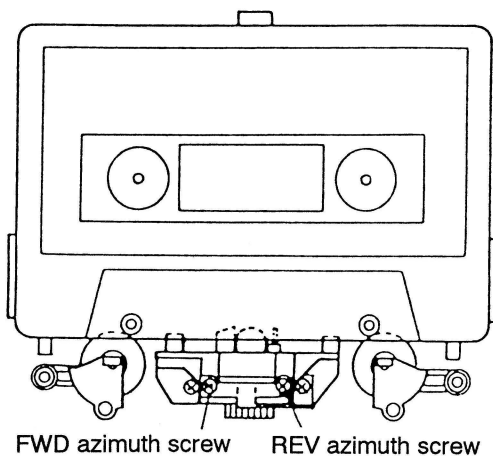


Fig. 6-5 Head azimuth adjustment

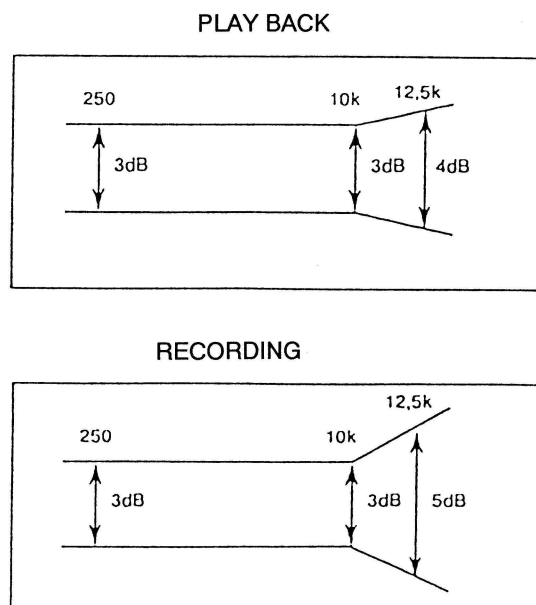


Fig. 6-6 Frequency response zone

PLAYBACK SECTION

1. Head Azimuth Adjustment

- Turn VR103, VR104 (Deck I) or VR101, VR102 (Deck II) to mechanical center positions.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 10 kHz/−20 dB section of STD−331E test tape.	Head azimuth adjustment screw. (See Fig. 6−5)	Pins ⑫ and ⑬ of CN901	Maximum playback signal level.	
2.	STOP	Lock the screw with screw lock after completing adjustment.				

2. Playback Level Adjustment

- This adjustment determines the DOLBY NR level, and must be performed with great care.

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	PLAY	Play the 315 Hz/0 dB section of the STD−331E test tape.	Deck I	VR103 (Lch) VR104 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	−6.7 dBV (CT−J410WR/J310WR)	
			Deck II	VR101 (Lch) VR102 (Rch)			

RECORDING SECTION

1. Bias Oscillator Frequency Adjustment (CT-J410WR)

- Adjust the bias oscillator with checks set to recording mode simultaneously. ← (Double R/P only)

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	REC	Load the STD−610 test tape with no input signal.	Deck II	T401	TP. 11	105 ± 0.3 kHz

2. Recording Bias Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently. ← (Double R/P only)
- After the adjustment, caution should be exercised so as not to become under bias by checking the distortion rate.

No.	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2.	REC	Record the 315 Hz and 6.3 kHz signals at −20 dB input level and playback.	Deck II	VR601 (Lch) VR602 (Rch) (CT−J410WR) VR401 (Lch) VR402 (Rch) (CT−J310WR)	Pins ⑫ and ⑬ of CN901	Repeatedly record, playback and adjust so that the playback level of 6.3 kHz signal becomes +0.5 dB ± 0.5 dB when compared with the 315 Hz signal.

3. Recording Level Adjustment

- Adjust the bias oscillator with decks I and II set to recording mode independently. ← (Double R/P only)

No.	Mode	Input signal & test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1.	STOP	Set the TAPE SELECTOR switch to the NORM position.					
2.	REC/ PAUSE	Apply a 315 Hz/−4 dB signal to the line input terminals, load the STD−631 test tape.	REC level control volume		TP. 1 (Lch) TP. 2 (Rch)	−11.2 dBV (CT−J410WR/J310WR)	
3	STOP	Set the DOLBY NR switch to the ON position. (DOLBY B)					
4.	REC/ PLAY	Record the above signal onto the STD−631 test tape, and playback.	Deck II	VR301 (Lch) VR302 (Rch)	TP. 1 (Lch) TP. 2 (Rch)	Repeatedly record, playback and adjust so that the playback signal level becomes −11.2 dBV (CT−J410WR/J310WR)	
5.	STOP	Set the TAPE SELECTOR switch to the CrO2 position.					
6.	REC/ PLAY	Record the above signal onto the STD−621 test tape, and playback.	Check		TP. 1 (Lch) TP. 2 (Rch)	−11.2 dBV ± 1.5 dB (CT−J410WR/J310WR)	
7.	STOP	Set the TAPE SELECTOR switch to the METAL position.					
8.	REC/ PLAY	Record the above signal onto the STD−610 test tape, and playback.	Check		TP. 1 (Lch) TP. 2 (Rch)	−11.2 dBV ± 1.5 dB (CT−J410WR/J310WR)	

7. TEST MODE

1 Entering the Test Mode

Supply the power with Pin 54 of the CPU (PD 3207A) connected to +5V.

2 Test Mode Operations

The BLE/SKIP LED will flicker while the test mode is operating, indicating that test mode is being set. During REC and REC PAUSE, the LINE MUTE opens in the same way as a deck sold separately.

Moreover, as the 5 seconds key mask immediately after the power is supplied will not be performed, test mode operations can be started immediately after mecha initialization.

(a) FL Check (CT-J410WR)

After the CPU RESET is released, the FL becomes a fully lighted display with only half of the luminance. As a result, disconnections and soldered bridges (the luminance of the bridge section will be normal) can be checked.

After mecha initialization has been completed, it can be returned to the normal display using any key input.

(b) Bus Port Operation Check

When the ENA/RE \overline{Q} pin (Pin 29) is set to "L", the SD pin (Pin 28) outputs the reversed level against the input level ("H" or "L") of the SCK pin (Pin 30).

ENA/RE \overline{Q} (29 pin)	SCK (30 pin)	SD (28 pin)
H	—	—
L	L	H
L	H	L

(c) Electronic VR (M51131L) Operation and

ASES LED Checks Using the Reverse Mode

CT-J410WR switches the attenuation amount of M51131L when the reverse mode switches are used. CT-J310WR lights up the ASES LED.

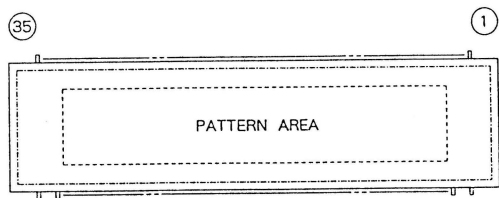
Reverse Mode SW	CT-J410WR	CT-J310WR
	Attenuation Amount (dB)	ASES LED
↔	-30	NORM LED lights up.
↻	Adjustment can be made with REC VR.	LED turns off.
⌚	-1	FINE LED lights up.

3 Releasing the Test Mode

The test mode will be released and normal operations and displays will be set, when the ASES key is turned on with both mechanisms in the stop condition, or when the CPU hardware is reset.

8. FL INFORMATION

● V1201 (RAW1097)

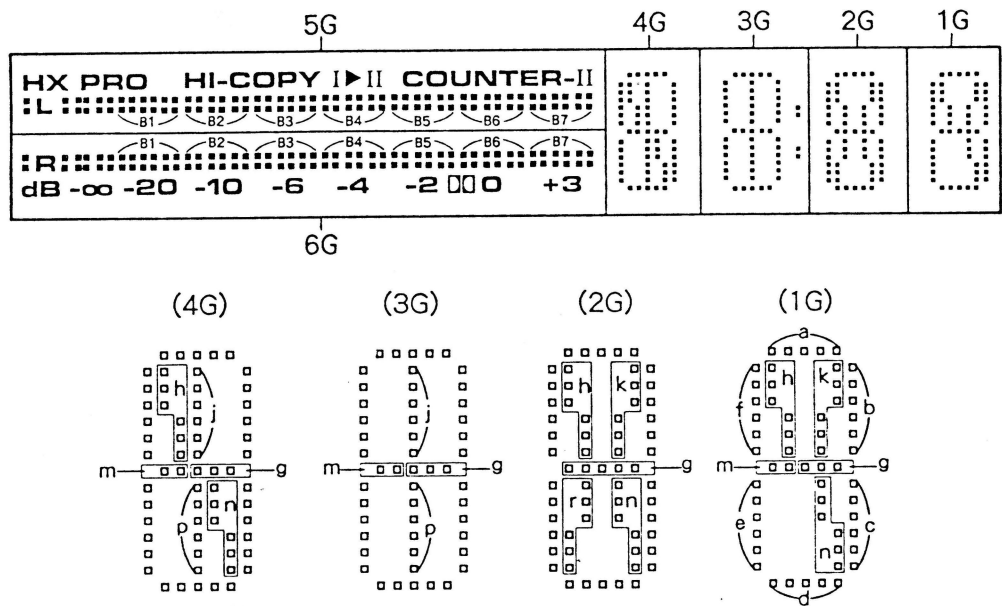


PIN CONNECTION

PIN NO.	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18
CONNECTION	F2	F2	NP	P13	6G	5G	4G	3G	2G	1G	P6	P7	P8	P9	NP	NP	NP	NP

PIN NO.	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	NP	NP	NP	NP	NP	P10	P5	P4	P3	P2	P1	P11	P12	P14	NP	F1	F1

Note: 1) F1, F2Filament
2) NPNo pin
3) NCNo connection
4) 1G-6GGrid

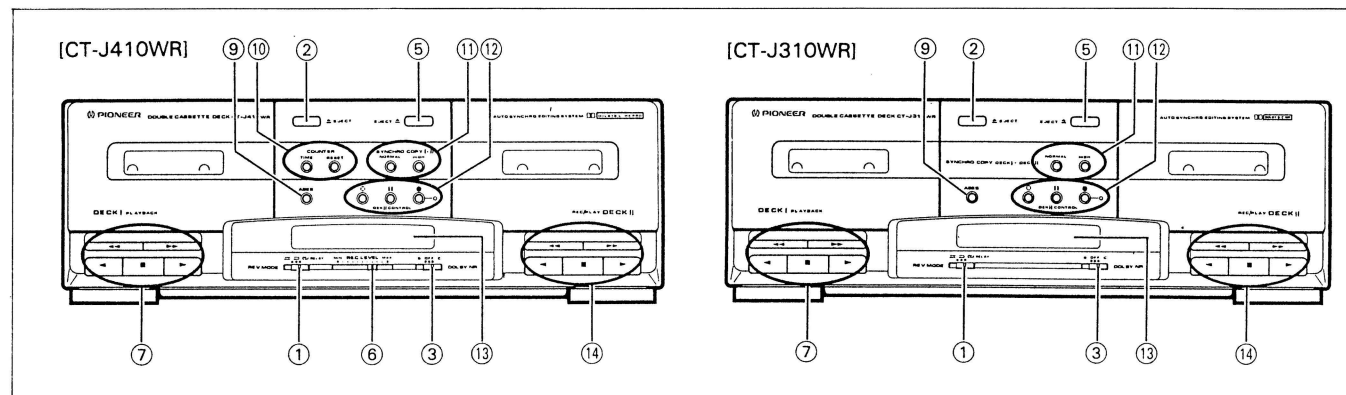


ANODE CONNECTION

	6G	5G	4G	3G	2G	1G
P1	B1	B1	a	a	a	a
P2	B2	B2	b	b	b	b
P3	B3	B3	c	c	c	c
P4	B4	B4	d.	d	d	d
P5	B5	B5	e	e	e	e
P6	B6	B6	f	f	f	f
P7	B7	B7	g	g	g	g
P8	dB - ∞ -20 -10 -6 -4 -2 0 +3	I	m	m	k, r	m
P9	—	COPY I ► II	j, p	j, p	h	h
P10	—	HI —	h, n	— 1/2	n	k
P11	—	—	—	—	—	n
P12	:R.....	:L.....	—	—	—	—
P13	—	HX PRO	—	—	—	—
P14	—	COUNTER — I	—	—	—	—

9. PANEL FACILITIES

FRONT PANEL FACILITIES



① REV (reverse) MODE switch

Use this to select tape travel direction during play and record.

⏮ : One-sided play and record.

⏮ : This enables auto reverse recording and auto reverse play. If you start with the tape running in reverse, only reverse play and recording are possible.

⏮ (RELAY): This enables auto reverse recording and auto repeat playback.

The tape does not reverse if recording starts from the (▶) direction.

Select this position for DECK I and II relay play.

② Deck I EJECT button

Press to open the cassette door.

NOTE:

This button functions only when the power is turned on.

③ DOLBY* NR switch

Set this switch to B or C for recording with the built-in Dolby Noise Reduction system and for playback of tapes which have been recorded using the Dolby Noise Reduction system. For other tapes, set the DOLBY NR switch to OFF.

NOTE:

When playing back DOLBY NR-encoded tapes, always set this switch to the same position (B-type or C-type) used for recording.

*

- Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
- "DOLBY", the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

⑤ Deck II EJECT button

⑥ REC LEVEL control (CT-J410WR only)

Use to adjust the recording level. It adjusts the input signal level.

⑦ Deck I operation buttons

- ▶ (PLAY): For playing back a tape in the forward mode.
- ◀ (PLAY): For playing back a tape in the reverse mode.
- (STOP): For stopping the tape.
- ▶▶ (FAST): Fast forward in forward mode, rewind in reverse mode. Music search (MS) starts if this is pressed during playback.
- ◀◀ (FAST): Rewind in forward mode, fast forward in reverse mode. Music search (MS) starts if this is pressed during playback.

⑨ ASES button

This can be used when recording from a PD-J410/PD-J510/PD-J910M CD player or CLD-J910 CD CDV LD player. The A.S.E.S. (Auto Synchro Editing System) function automatically edits when recording from a CD to a tape.

⑩ COUNTER buttons (CT-J410WR only)

TIME: Use this to switch between tape counter number display and display of elapsed time.

The TIME counter operates only during playback and recording.

RESET: Use this to reset the tape counter display to 0000.

⑪ SYNCHRO COPY buttons

Used for tape copying.

NORMAL: Copying from the deck I tape to the deck II tape at normal speed.

HIGH: Copying at about twice normal tape speed. (Copies can be made in about half the NORMAL time.)

⑫ DECK II CONTROL buttons/indicator

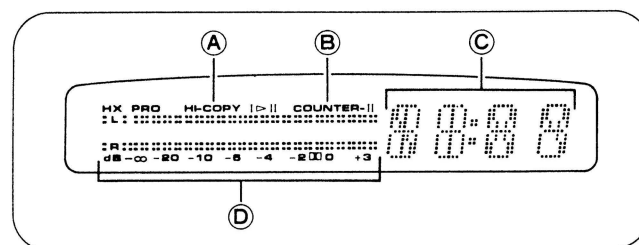
○ (MUTE): Used for creating a blank space during recording.

⏸ (PAUSE): Temporarily stops tape travel.

● (REC): To set to recording standby mode. Recording begins when you press the play button (▶ or ▶▶) or PAUSE (⏸) button.

⑬ Display section

[CT-J410WR]



A Lights during tape copy.

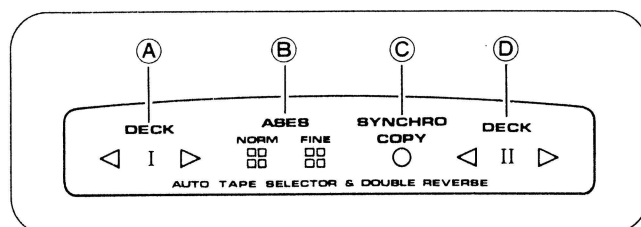
B Indicates the deck (I or II) displaying counter indications.

C Tape counter or time counter indication of elapsed tape time. During Music search operation, it indicates the number of tracks skipped. Also shows "ASES" and other indications.

D Level meter

The mark displayed on the level meter is the Dolby NR system standard level. Indicates pattern during "ASES", etc.

[CT-J310WR]

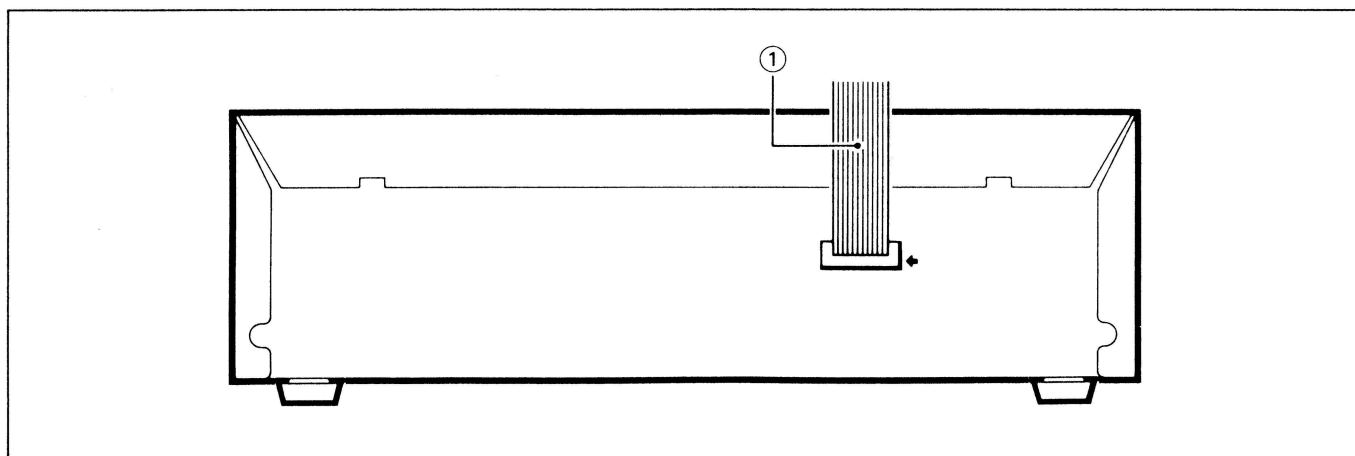


- Ⓐ Displays tape travel direction of DECK I.
- Ⓑ Lights during ABES MODE.
- Ⓒ Lights during tape copy.
- Ⓓ Displays tape travel direction of DECK II.

⑭ Deck II operation buttons

The same as the operation in ⑦ Deck I operation buttons.

REAR PANEL FACILITIES



* Illustration shows model CT-J310WR.

① CASSETTE DECK system cable

Connect to the TAPE DECK jack of the tuner control amplifier.

10. SPECIFICATION

[CT-J410WR]

Systems.....	4 track, 2-channel stereo
Heads	"Hard Permalloy" playback head x 1 "Hard Permalloy" recording/playback head x 1 "Ferrite" erasing head x 1
Motor.....	DC servo 2 speed motor x 2
Wow and flutter.....	±0.19 % (DIN) 0.09 % (WRMS)
Fast winding Time.....	Approximately 120 seconds (C-60 tape)
Frequency Response (– 20 dB recording):	
TYPE I (Normal)	25 Hz to 16,000 Hz ± 6 dB
TYPE II (HIGH/CrO ₂)	25 Hz to 16,000 Hz ± 6 dB
TYPE IV (Metal)	25 Hz to 17,000 Hz ± 6 dB
Signal-to-Noise ratio	
Dolby NR OFF	More than 58 dB
Noise Reduction Effect	
Dolby B type NR ON	More than 10 dB (at 5 kHz)
Dolby C type NR ON	More than 19 dB (at 5 kHz)
Harmonic distortion	No more than 1.0 % (– 4 dB: 160 nwb/m)

Miscellaneous

Dimensions	360 (W) x 328 (D) x 120.5 (H) mm
Weight (without package)	3.9 kg

[CT-J310WR]

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Heads	"Hard Permalloy" playback head x 1 "Hard Permalloy" recording/playback head x 1 "Ferrite" erasing head x 1
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Dolby NR OFF	More than 58 dB
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